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SCIENTIFIC RESULTS

OF

THE SECOND YARKAND MISSION;

BASED UPON THE COLLECTIONS AND NOTES

OF THE LATE

FERDINAND STOLICZKA, PH.D.

INTRODUCTORY NOTE AND MAP.

Published by order of the Government of India.

1878–1891.

LONDON:
PRINTED BY EYRE AND SPOTTISWOODE,
HER MAJESTY'S PRINTERS.

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This work constitutes a very imperfect record of one single year's work, as Geologist and Natural Historian, of our dear lost friend and comrade, Ferdinand Stoliczka. Imperfect,—because we have had only his collections (and indeed not quite all of these*) and a very brief private diary—a mere *aide memoire*—to work upon, and so are able to present only the dry bones, as it were, of the results of his labours; dry bones which, had he survived to deal with them himself, would have risen up a living entity, enriched by the substantial body of his own local personal observations, and vivified by his genius. Imperfect,—but yet the best memorial that, under the circumstances, we survivors could raise to him, untimely hidden away in that lone Tibetan grave, where

"Low he lies, who once so loved us, whom we loved so."

Imperfect,—but, for all that, affording every here and there glimpses of that industry, perseverance, and self-devotion, which, informed by wide scientific knowledge, and sanctified by a pure and generous heart, constituted Stoliczka's irresistible claims to the respect, the admiration, and the love of all who ever came closely in contact with him.

But it is not within my province to speak more of the *man*. My friend, Mr. Valentine Ball, in his Memoir of the Life and Work of Dr. Stoliczka, which immediately follows this brief introductory note, has already told all that it concerns the world to know of one whom death, untimely striking, alone prevented from taking his due place amongst those heroes of science whose bloodless, blameless triumphs remain for ever the inheritance and the blessings of mankind. It is with the genesis of this particular *work* that *I* am called on to deal, and that was in this wise:

When in 1873 the Government of India decided to send a political mission under Sir Douglas Forsyth to the Court of the Atalik Ghazi, the then Mussulman Sovereign of Central Asia, the ruler of what is now known as Chinese Turkestan, it was determined to attach to the mission a geologist and naturalist, and the choice necessarily fell upon Stoliczka, as pre-eminently the most highly qualified geologist and all-round naturalist then (or, I might truly add, at *any* time) residing in India.

Captain Trotter, R.E.'s work on the Geography of the Expedition gives the fullest details of the routes by which the mission travelled and returned, and an abstract of this will be found in Mr. Ball's paper which follows. Suffice it here to say that Stoliczka arrived at

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* Some of his collections were, undoubtedly, by mistake mixed up with the private collections of other members of the mission, and so never fell under the purview of the gentlemen who prepared this record.—A. O. H.

Murree, where his work recorded in these volumes commenced, on the 10th of June 1873, and passed away from us and from all earthly labours on the 19th of June 1874, soon after crossing the Dipsang Plateau on his return journey from Central Asia.

When some months later his collections arrived at Simla, and we realized how strenuously he had laboured and how extensively, despite the severe hardships of considerable portions of the journey, he had collected, I moved the Government of India to provide funds for the publication of some permanent record of these collections, and these funds being most liberally conceded, I, in accordance with the last wishes expressed to Sir Douglas Forsyth by Dr. Stoliczka, undertook the general editorship of this present work, which was intended to embody the available scientific results of that arduous journey, and those indefatigable labours, to which there is no doubt that Stoliczka sacrificed his life.

Accordingly, with the assistance of Messrs. W. T. Blanford and Wood Mason, I divided off the collections (except a few groups of insects, for most of which Mr. Mason subsequently arranged) between various naturalists who undertook, gratuitously—out of regard for the memory of a true brother in science, too early taken from us—the classification and description of the specimens pertaining to the branches in which they were respectively experts, each being furnished with a copy of the diary to which I have already referred. I am bound to add, however, that this diary, though doubtless it would have amply sufficed to recall to Stoliczka all he desired to say in regard to each specimen, was too brief, and had been, as a rule, all too hurriedly jotted down to prove of much real assistance to the workers.

The birds alone—this being a branch of natural history with which I was at the time fairly conversant—I retained, as Stoliczka had desired, to deal with myself, and I at once worked these out, prepared my paper, and sent to England the specimens which I considered ought to be figured. But Mr. Sharpe, to whom I entrusted the work, met, it would seem, with insuperable difficulties in getting the required plates prepared, and *many* years elapsed before these were all ready. In the meantime, not only had my paper been destroyed along with almost all my other ornithological MSS., but I myself had given up ornithology for more serious pursuits, and hence it came about that this section of the work, also, passed into other and abler hands, its preparation being finally entrusted to Mr. Bowdler Sharpe.

As it stands, this work is composed as follows :—

1. Memoir of Stoliczka's Life and Work, by Valentine Ball, C.B., F.R.S.
   Published 1886.
2. Geology of the countries traversed by the expedition, including observations made by Dr. Stoliczka during a previous visit to the Himalayas, edited by W. T. Blanford, F.R.S.
   Published 1878.
3. Syringosphæridæ, by Professor P. Martin Duncan, M.B., F.R.S.
   Published 1879.
4. Mammalia, by W. T. Blanford, F.R.S. (Chiroptera, by G. E. Dobson, F.R.S.)
   Published 1879.
5. Birds, by R. Bowdler Sharpe, LL D., F.L.S.
   Published 1891.

6. Reptilia and Amphibia, by W. T. Blanford, F.R.S.
Published 1878.

7. Ichthyology, by Francis Day, C.I.E., LL.D.
Published 1878.

8. Arachnida :
Araneidea, by the Rev. O. P. Cambridge, F.R.S., C.M.Z.S.
Published 1885.

9. Insects :
Hymenoptera, by Frederic Smith.
Published 1878.
Neuroptera, by Robert McLachlan, F.R.S.
Published 1878.
Rhynchota, by W. L. Distant, F.E.S.
Published 1879.
Lepidoptera, by Frederic Moore, F.Z.S., A.L.S.
Published 1879.
Coleoptera :
Geodephaga, *Longicornia*, by H. W. Bates, F.R.S.
Heteromera, by F. Bates.
Cetoniidæ, by O. Janson, F.E.S.
Haliplidæ, *Dytiscidæ*, *Gyrinidæ*, *Hydroptilidæ*, *Staphylinidæ*, *and Scarabeidæ*, by D. Sharp, F.R.S.
Phytophaga, by J. S. Baly, F.L.S.
Published 1890.

10. Mollusca, by Geoffrey Nevill, C.M.Z.S.
Published 1878.

There remain unrecorded a very few and unimportant specimens of scorpions and crustacea which Mr. Wood Mason originally intended to describe, but ultimately considered scarcely worth recording, and a few *Curculionidæ* and other coleopterous odds and ends which we have been unable to find anyone willing to undertake.

A great deal of troublesome work in seeing all these parts through the press has devolved, not on myself, as it should have done, for I have been prevented by circumstances from taking my proper share in the work, but on Mr. W. T. Blanford and Mr. Wood Mason, to whom, together with the several authors of the parts above enumerated, are due the thanks of all students who may therein find pleasure or profit.

ALLAN O. HUME.

The Châlet, Kingswood Road,
Upper Norwood,
London. S.E.

GREAT TRIGONOMETRICAL SURVEY OF INDIA.
R U S S I A N E M P I R E
T U N G Á N I C O U N T R Y
KULDJA
URUMTSI
TURFAN
BARKUL
HAMI or KUMUL
VERNOYE or ALMATI
AULIATA
Tokmak
Pishpek
Issigh Kul
Bostang Nur
Karashar
Karkara Usu
Manas
Sanju Urtang
Ili R.


PRELIMINARY MAP
OF
EASTERN TURKESTAN
TO ILLUSTRATE THE REPORTS ON
SIR DOUGLAS FORSYTH'S MISSION TO KASHGHAR,
1873-74.
Compiled by CAPTAIN H. TROTTER, R.E., DEPUTY SUPERINTENDENT GREAT TRIGONOMETRICAL SURVEY OF INDIA. Drawn and photozincographed in the Office of COLONEL J. T. WALKER R.E., F.R.S. &c., SUPERINTENDENT of the Survey. January 1875.
NOTE.
The positions of all places visited by the Mission in E. Turkestan and Wakhan depend upon Captain Trotter's astronomically fixed position of KASHGHAR, (Yangi-shahr), viz., N. Lat. 39° 24' 26", and Longitude 76° 6' 47" E. of Greenwich.
The positions of the Surkhab (or River of Karatigin) and in the Alai are taken from Fedchenko's map accompanying his Memoir on the Head Waters of the Oxus. Details in Russian Territory are from the Russian topographical map of CENTRAL ASIA (corrected to 1873) as also are the positions of Aksu and the large towns to the E. with the exception of those in the extreme N. E. portion of the map which are taken from Ney Elias's map of WESTERN MONGOLIA published in the Royal Geographical Society's Journal for 1873.
The details to the S. are taken from surveys and reconnaissances by members of the mission and from Colonel Walker's map of TURKESTAN. The positions in the latter have been shifted three minutes to the west in longitude to bring them into accordance with the most recently determined value of the longitude of the Madras Observatory.
Where no Survey exists numerous details have been inserted from native information.
The heights are mostly based on the G. T. Survey value of Leh. Stn. No. 2, viz. 11,518 feet above sea level.
Routes followed by members of the mission are coloured red.
The Boundaries laid down on this Map are approximate only and are not to be considered authoritative.
T Douglas Forsyth
Scale 1 inch = 40 miles
EASTERN TURKESTAN
GREAT SANDY DESERT
TAKLA MAKÁN DESERT
CHINESE EMPIRE
KHOKAND
KASHGHAR
YARKAND
KHOTAN
AKSU
KUCHAR
PESHAWAR
SRINAGAR
Lop Nür
Bostang Nür

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MEMOIR

OF THE

LIFE AND WORK

OF

FERDINAND STOLICZKA, PH.D.,

PALÆONTOLOGIST TO THE GEOLOGICAL SURVEY OF INDIA
FROM 1862 to 1874.

BY

V. BALL, M.A., F.R.S., F.G.S.
DIRECTOR OF THE SCIENCE AND ART MUSEUM, DUBLIN.

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LONDON:
PRINTED BY EYRE AND SPOTTISWOODE,
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FERDINAND STOLICZKA, PH.D.

FERDINAND STOLICZKA, the subject of this Memoir, was born at Hochwald, in Moravia, in the month of May 1838. His father was a Forest Officer in Kremsier, and though but little is on record of Stoliczka's early life, it may, perhaps, be assumed that at this period there were opportunities afforded to him, which we cannot but suppose he eagerly availed of, for cultivating that ardent love of nature which characterised in a remarkable manner the man in after life.

His school education was obtained at the "Gymnasium" in Prague, from whence he proceeded to the University of Vienna, where he largely devoted his time to Natural Science, and especially to those branches of it which are most intimately connected with Geology. On graduating from the University he took the degree of Doctor in Philosophy.

To Professor Süess, who still presides over the Geological Department in the University of Vienna, he was indebted for his first regular training in Geology, and with the "friendly and "almost fatherly aid of Dr. Hörnes, of the Imperial Cabinet, he made his first essay in "Palæontology."

Dr. Stoliczka's first paper of which we have any record was a description of certain species of fresh-water Mollusca which characterise a stratum associated with the marine beds of the cretaceous formation in the North-eastern Alps.

This paper (1),* which was presented to the Vienna Academy by Professor Süess, and was subsequently published, contained descriptions of nine new species and a new genus (*Deianira*); it was illustrated by a plate, which includes, besides figures of these species, one of the tooth of a saurian which was found associated in the same bed. Thus, it may be said, was Stoliczka's career as a palæontologist commenced by a valuable and carefully worked out descriptive paper when he was only about 21 years old.

One year later (1860) his second paper was read before and published by the same Academy (2). Its subject was the *Gasteropoda* and *Acephala* of the Hierlatz Beds, and it contains descriptions and figures of about 40 new species. The plates are especially noteworthy for their excellence; they belong to a standard of quality to which Stoliczka often strove to attain in India, but with only partial success, owing to the difficulties attending such work in that country. These two papers were followed in quick succession by others on the Tertiary Fossils of the Southern Alps (3), and the Crystalline Schists of Southern Hungary (4), &c.

In the year 1861 Stoliczka became attached to the staff of the Austrian Geological Survey, of which Dr. Haidinger was then the chief. In the following year two papers appeared on a subject which he had in a very special manner made his own, namely, the Bryozoa; the first of these was entitled the "Oligocene Bryozoa of Latdorf, in Bernburg," and was published in the Proceedings of the Vienna Academy, with full illustrations (6); the second was on the "Heteromorphous cell-formation of Bryozoa (*Cœlophyma*, Reuss)," and appeared in the Transactions of the Zoological and Botanical Society of Vienna (7). The same volume contains a "Contribution to the knowledge of the Molluscan fauna of the Cerithien and

* These numbers refer to the Catalogue of Dr. Stoliczka's papers given on pp. 32 to 36.

o Y 9787. 300.—7/86. I. 268.

" Inzersdorfer Beds of the Hungarian Tertiary basins " (8); from the former two, and from the latter eight species are described and figured as new. Two papers (9 and 10) "on the " Geology of South-western Hungary " were the next to appear; these being followed in the year 1864 by "A critical notice of Herr F. v. Römer's description of the North German " tertiary Polyparians " (11).

Referring to this period in a letter to the writer, Herr Ritter v. Hauer says: "Fully " apparent in these first works of Stoliczka are the conscientious accuracy and extensive " knowledge of which he gave such ample proof in later life. He acquired for himself " during his residence amongst us, in equal manner as he did later in India, the sincerest " friendship and regard of all his colleagues."

In the interval which elapsed between the publication of the last paper and those which preceded it, Stoliczka, already a palæontologist with a made reputation, had entered upon the new field of his labours.

In the year 1862, Dr. Oldham, the Superintendent of the Geological Survey of India, visited Europe, for the purpose of obtaining four additional assistants for the staff of the Survey. Large numbers of fossils had been accumulated by the labours of the Geological Survey in Southern India and elsewhere, and awaited the arrival in India of a qualified describer. It was important on this account that at least one of the four assistants to be selected should be a competent palæontologist. Application was therefore made in Vienna to Dr. Haidinger and Professor Süess, with the result that Stoliczka was named as a palæontologist with an already established reputation, and as he proved, when introduced to Dr. Oldham, to be not only willing, but most anxious to obtain service in India, he was at once recommended to the Secretary of State for India as a suitable candidate to fill one of the vacant posts. Soon afterwards he was duly appointed. In order to make the acquaintance of some of his future colleagues, and see the country whose service he had entered, he forthwith paid his first visit to England, and was present at the meeting of the British Association which was held in the autumn of the year 1862 at Cambridge, together with Mr. W. T. Blanford, who was at that time home from India on leave, and also with Mr. A. B. Wynne, another of the newly appointed surveyors, by whom Stoliczka is described as being at that time a slight young fellow, wearing spectacles, and having a black beard and long hair brushed back. All who met him then, in spite of his difficulty in expressing himself in English, were impressed with his unaffected geniality. The three colleagues were to have sailed for India together, but as Blanford and Wynne received instructions to take up work at Bombay, and Stoliczka was bound for the head office at Calcutta, this project was not carried out, and he started alone.

On arrival in Calcutta the Cretaceous Fossils of Southern India were placed in his hands, and he soon set to work on his *magnum opus*, which, when completed, in 1873, contained 1,454 pages and 176 plates.

In the year 1864 Stoliczka made his first acquaintance with the Himalayas, and as a result of the journey which he took in company with Mr. F. R. Mallet, of the Geological Survey, who had previously visited a part of the same region, he published a memoir on the sections across the mountains from Wangtu Bridge, on the River Sutlej, to Sangdo on the Indus, to which was added an account of the geological formations in Spiti, with a revision of all the known fossils from that district (15).

In his introductory remarks he says, " there are few parts of India which offer so many " difficulties to the scientific traveller as that elevated tract of mountains which borders the

" north-west of British India—the North-western Himalayas. Several portions of this " country, being partly independent or protected States, have rarely, if ever, been visited by " any European traveller, and such visits as have been made have usually been in " great haste, for the resources of the country do not generally admit of any long stay in " one place. As a result of these great difficulties we do not as yet know much of the " natural wealth of this portion of the Himalayan ranges, although probably more of this " than of the more eastern parts of this great system of mountains."

He then proceeds to give a brief abstract and criticism of the observations on this region by Strachey, Moorcroft, Trebeck, Herbert, Gerrard, Jacquemont, Thomson, Cunningham, Hutton, Hay, Theobald, and Medlicott. With reference to the sections between the plains and the Sutlej which were examined and described* by the last-named, he writes : " These three sections give an insight into the relations of the rocks between the plains on " the south and the Hatu mountain, near Narkanda, to the north-east of Simla. When " Mr. Medlicott's report was published, the contrast between the geological structure of the " southern portion of the Himalaya and that of the northern portion, so far as then known, " must have been noticed by every reader. It was, therefore, of the highest interest to " ascertain, if possible, the connexion between these, chiefly metamorphic, rocks of the " southern slopes and the fossiliferous rocks of Spiti, which, since the time of Gerrard's " first discoveries, have been several times examined. The stratigraphical relations of these " fossiliferous rocks in Spiti had not, however, been successfully traced out, and even " Mr. Theobald's and Mr. Mallet's collections of 1861 gave no sufficient explanation, showing " clearly a mixture of fossils from different formations. Such being the case, it was almost " unavoidable to repeat the attempt to trace out the stratagraphical positions of the Spiti " rocks."

In the beginning of June 1864 the party started from Simla, north-eastwards, through Bissahir to Spiti, crossing the Bhabeh pass. So far as time permitted, the Spiti problems were submitted to examination. Thence a move forward over the Parang pass was made to Rupshu, and so onwards through the Para, Tsomoriri, and Puga valleys to the Indus. After two days' march along that river, another cross traverse was made through Ronggo, Hanle, and the Tagling pass to Spiti. The western and north-western parts of Spiti were then examined in some detail, and the return to Simla was made by a route traversing Lahoul and Kulu.

A small outline map attached to the memoir enables the reader to follow the geographical indications of position and some special geological details, but the materials for a geological map in the full sense of the term were not obtained till many years afterwards, when Mr. R. Lydekker prepared the map of the extensive region which includes the tracts visited by Stoliczka.

To many geologists, and especially to Stoliczka, the preparation of detailed maps and the tracing out of boundaries have proved tasks to be avoided, while following sections across wide tracts of country have presented a far stronger attraction. These remarks are only made *en passant*, as the subject was one often referred to by Stoliczka in conversation, for on the present occasion there was neither time nor intention to attempt to prepare a geological map in the ordinary sense of the term.

Besides the regular official report of this journey which has just been noticed, a letter from Simla was published in the Proceedings of the Vienna Academy.

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* Mem. Geological Survey of India, Vol. III, Part 2.

"*My last letter was, I think, dated Kotgurh the 11th June. I was then already on my "journey, and only returned a few days ago to Simla. My colleague, Mr. F. R. Mallet, "remained with me the whole time of our expedition, and begins in a few days his survey "in Central India towards Bombay. We left Simla on the 8th June, and our journey went "beyond Spiti towards Rupshu and up to Hanle on the Indus. I regret that it was im- "possible for us to return to Spiti from Hanle by the Chinese Province of Tshu-Tshu. We "ourselves encountered no difficulty, but the inhabitants declared war upon the followers "who accompanied us, and we received orders from the Government to avoid all contact. "We returned back again through the northern portion of Spiti, and from thence by the "English provinces of Lahul and Kulu to Simla. All the time we enjoyed splendid health, "and as we were 18,000 feet above the sea, on the Lanak pass, near the Indus valley, it was "not exactly agreeable in our tent; the temperature being 18 degrees of Fahrenheit. But "the prospect towards Eastern Tibet and the northern hills was magnificent. We crossed, "however, a still higher pass, the Parang-la, about 19,000 feet high, but were nearly over- "whelmed by a fall of snow.

"As for what concerns the geological portion of our expedition, I can call it a success. "It is not in the least degree below my expectation. In Spiti, where heretofore only two "formations were known, there are nine clearly established, all, with the exception of the "uppermost, petrographically distinguishable layers, with very characteristic fossils. A "brief sketch is this. Before one reaches the Bhabeh pass (in the Central Himalayan chain) "one finds oneself on Silurian ground, and this formation continues to the Kunzum pass, in "the north-western direction towards Lahul. Upon the Silurian strata lies the Carboniferous "formation, with characteristic fossils, and three separate petrographical subdivisions: "conglomerate and siliceous sandstone, earthy calcareous shales, and quartzites. On this "rests a very extensive series of limestones, the lower strata Trias, with *Halobia lommeli*, "globose Ammonites, *Orthoceras*, *Auloceras*, and many Brachiopods. Upon the Trias lies a "bituminous limestone, with extraordinarily large and massive bivalves, somewhat resembling "the *Megalodon triqueter*. I obtained, after much pains, a whole example, nearly a foot "broad. Undoubtedly, remains of Gasteropoda are extremely rare, as one sometimes finds in "the Kössener strata. I scarcely think that this limestone with the bivalves can represent "anything else than the Rhætic formation with the *Haupt-dolomit*.

"Again, a limestone with Belemnites, Ammonites (very rare) and many Brachiopods. It "was not possible to identify more certainly, by a mere superficial examination, whether "this limestone is Lias, but I scarcely doubt it, as a Gasteropod at the Parang pass, and also "the Brachiopods, closely resemble and are possibly identical with sundry Alpine fossils in "the Hierlatz Beds.

"Over these three limestone formations (possibly more will be ascertained by a future and "further survey) lie the argillaceous and shaley beds, with concretions which contain the "known Spiti Cephalopod fauna; these are our 'black shales.' These strata have a small "thickness, and, like the following formations, a limited extension in Spiti. But the black "shales are followed by yellowish, generally silicious or calcareous sandstones with *Avicula "conf. echinata* and an *Opis*. I consider these strata to be equivalent to the upper Jura of "Natthcim, &c. Upon this a lighter limestone with *Nodosaria*, *Dentalina*, *Cristellaria*, "and fragments of shale, which, I think, can only with the utmost difficulty be regarded as

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* Letter to Dr. Haidinger, dated Simla, 3 Oct. 1864. Sitz. der K. K. Akad. Wien, Band L, Abth. I, pp. 379–382.

" belonging to the same formation, while it is highly probable that it belongs to the " cretaceous formation, although no trace of it is known in the Himalayas, as in Persia.

" Over all there lies, in Spiti, a light calcareous marl, that appears to be of the same age " as the underlying chalk, but of fossilisation there is not a trace to be found.

" Oldham considers this result as one not to have been expected, although it is all as clear " as it can be. Indeed, surveying is here of some difficulty. Hunger, thirst, and cold are " daily companions, but not a single tree, or even a blade of grass, hinders or conceals the " view of the picture which spreads itself before the eyes of the geologist. The majority of " the hills reach, in the snow region, to upwards of 20,000 feet, and the lower ranges are " commonly 8,000 to 10,000 feet, and often more. For nearly three months I did not see a " single tree, and but little vegetation; such as it is, however, it is exceedingly interesting. " I collected every plant that came under my eyes (of course, with the help of my followers), " and neither Stur and his *Drabas* nor Schott with his *Primulas* were forgotten. I have " looked particularly sharply after *Draba*, and to-day I hope to send a small package to our " friends. I have made numerous notes upon the flora and fauna, especially upon the " highest animal and plant life and their limits. Insects are apparently abundant, some " birds, reptiles, fish, and mammals, unfortunately very few snails; no wonder, where there " is no rain, or the same as none, there the vegetation is very poor, and how then can snails " be there? In the whole of Spiti I only found three *Helices*, one *Pupa*, and one *Lymnæa*, " all nearly microscopical; this even F. v. Hauer must accept (I think I am not mistaken), " as the complete fauna of a whole trans-Gangetic province.

" Beyond Spiti I did not find a trace of land shells. Of *Equus kyang*, the wild ass (not " horse as it is often called), I obtained more skins and skeletons; also of *Capra ibex*, and " others. Immediately on reaching Calcutta I will send all to Vienna.

" I brought a quantity of curiosities with me, manuscripts, weapons, and pictures, if one " can so call the Tibetan work.

" The mineralogical productions are, as yet, but little described, and we collected about " 30 mineral species, many very rare and good examples. On the Indus, near Rongo, and " in the extension from the mouth of the Puga to the Hanle stream, are widespread syenitic, " epidotiferous, serpentiniferous, and diallagiferous rocks. In the serpentine chromic iron " occurs not uncommonly, and in veins of the same there is found a green mineral, which " includes chrome, and is probably oxide of chrome, which Dana barely mentions in his " 'Manual' and altogether ignores in his 'System.' As soon as I get back to Calcutta, " I hope, after an examination of the whole, to prepare a short list, as, in spite of " Herbert's 'Report,' so little is known of the much esteemed mineralogical wealth of the " Himalayas.*

" I remain only a few days here, and spend the rest of this month between Simla and the " plains, in order to accomplish my geological section of the whole of the hills. I must " be in Calcutta by the beginning of November, where much work awaits me.

* * * * * * * *

Among Stoliczka's first papers published in the English language was a zoological one (12) descriptive of a small mammal of which he obtained several examples in Ladak, near the extreme limit of vegetation, at an elevation of about 19,000 feet.

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* A list and description of these minerals by Mr. F. R. Mallet was published in the same memoir as Stoliczka's report above quoted.

His work on the Cretaceous Cephalopoda of Southern India was steadily progressing in the early part of this year, 1865, and some of the general results which he had arrived at were communicated to the geological public in Europe, through the agency of the Geological Society of London, the Philosophical Magazine, and the Verhandlungen of the Vienna Geological Reichsanstalt.

Having completed the MSS. of his memoir upon the Himalayas, from which the above extract has been quoted, and an elaborate paper, entitled "A Revision of the Gasteropoda " in the Eastern Alps," which was dated Calcutta, April 20th, 1865, and published in the "Sitzungsberichte" of the Vienna Academy for the same year, he again started for the North-west, leaving Calcutta early in 1865. As companions on this journey he took with him an artist friend and a dog, a dog so remarkable that he is deserving of some notice in this Memoir. It was not until the following year that the writer made the personal acquaintance of the master, an acquaintance which soon ripened into warm friendship and regard as circumstances brought us into close association both in office and in the field. The acquaintanceship with the dog was of a very limited character indeed, in fact we were never even on speaking terms, for a more unapproachable irreconcilable canine savage it was never my lot to meet. He had served Stoliczka as a guard in his tent on the wild Himalayan slopes so efficiently that stories were told of how the artist friend, when he returned to camp, was often kept for hours sitting disconsolate outside the tent, till Stoliczka's arrival after his day's work afforded the necessary escort for a practicable entrée. Stoliczka and the native who fed the dog were alone recognised as masters, and the method by which he was first subjugated by his master was of the most stringent and severe character. At the hotel in Calcutta where we stayed the dog's critical inspection, as though with a view to future operations, of the calves of everyone he met on the stairs, and still more his fancy for constituting himself the guardian and sole occupant every morning of a whole range of bath rooms, led to such complaints on the part of the residents that before long his master had to part with him and he disappeared from the scene.

In March 1866 Stoliczka had completed the account of this second trip, and it was soon afterwards published, appearing together with the previous one in the same volume of the Memoirs of the Geological Survey of India.

He described the route followed on this journey in the following words:—*

"Starting from Simla on the 1st of May 1865, I proceeded through Suket, Mandi, the " Kulu valley, and then, crossing the Rotang pass, to Kyelang in Lahul. Here I was " detained for nearly a week, waiting until I could hear whether the Baralatse pass " was passable or not. After having received favorable reports, I managed to cross the " pass on the 22nd June, and after two short marches reached the Chumig-giarsa, a spring " remarkable for its large supply of cold water, a little north of the junction of the Lingti " and Yunam rivers, and at the place where the Tsarap river unites with both. Up to this " the course of my journey was more or less, but mainly, due north from Simla.

"From Chumig-giarsa I turned towards the east, proceeding south along the Tsarap valley, " up its course; crossed the Pangpo-la into the Phirse valley, then the Lanyer-la† into the " Gya valley, and after a few minor passes (of about 18,000 feet in elevation) reached " Korzog on the 2nd July.

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* Mem. G. S. I., Vol. V, pp. 338–340.

† *La* in Tibetan means a *pass*.

"Here, being at the principal camping ground of the Rupshu tribe, I arranged for my "further journey and started on the 5th July for Puga,* and from here towards the Thso†- "Kar and the foot of the Taglang pass, the second camping ground of the Rupshu tribe. "After again one day's interruption of my journey, rendered necessary by making further "arrangements, I crossed the Taglang pass and reached Leh on the 16th July. This place I "left on the 21st July, proceeding towards the village Rumbag, and then in crossing a few "minor passes to Trantse-Sumdo, the summer camping ground of the Karnag tribe; crossed "the Shapodog and Saiji La and reached Padam on the 6th of August after a horrible ex- "perience of hill travelling. I may remark here that it is not the bad road nor the high "passes which make travelling in these wild countries difficult at this time; in this case it "was chiefly due to the large quantity of glacier water, which had swollen every stream to a "depth of 3 or 4 feet; and to cross these torrents, often 20 times, while on a day's march, is "ruin to those who cannot enjoy every comfort during and after the day's work. Having "seen the necessity of parting here with the remainder of my men from Kulu, who had "offered me their services for the whole trip, on my arrival in Simla on the 10th of May, a "few days elapsed before other arrangements for the journey were settled. On 10th of "August I was able to start, and proceeded from here to Suroo and then to Kargil, from "which a separate trip towards the Indus in a north-eastern direction (across the Hambuting "pass) was thought necessary. I again left Kargil on the 1st of September, visited Dras, "and reached Srinagar on the 10th September, there I had to overcome some of the "difficulties of the season and of certain restrictive orders as to travelling in Kashmir; but I "at last managed to start, on the 26th of September, on my route through Islamabad, "Kishtwar, Budrawar, Chambi, and Kangra, and reached Simla again on the 31st October "1865, thus terminating my trip for this season."

A very interesting sketch of the characteristics of the fauna and flora of Chini formed the subject of a communication to the Zoological and Botanical Society of Vienna in 1866 (19). The successive portions of this paper deal with—I, Valley of the Sutlej river; II, Geographical position of Chini; III, Climatic conditions; IV, Soil; V, Flora; VI, Fauna, to which are added some remarks on the inhabitants. While it may be said that for its thoroughness, accuracy, and withal readable and attractive style, it is a pattern of what such a description of a district should be, it must be added that comparatively few men are competent to write such accounts, owing to the diversity of acquirements, coupled with powers of observation, which are required for the purpose.

Space does not admit of more than a quotation from the concluding remarks in this paper.

"This is the condition of a small luxuriant tract in the valley of the historically renowned "Sutlej. My intention was, as I stated above, to direct the attention of readers to the "vegetation and fauna of a tract which serves as an equivalent to our middle temperate "zone. The observer of nature alone feels the truth of the long stated proposition that "similar climatic conditions produce and cause to live and flourish similar (I will not say "the same) plants and animals. I have been led to this picture by the wonderful "contrast produced by the sharp boundary of these snow peaks. On that side the moist,

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* *Puga* signifies a *hole*, referring here to the sulphur mines.

† *Thso* means a *lake*; *Chu* a *river*, or, in general, water.

" warm Indian climate of the sub-tropical foreign kind, and on this side the northern " temperate climate of home.

"Where the lofty chain is partly or wholly interrupted by a valley, there the same " necessary moisture is present to produce the climatic conditions as in the majority " of the provinces of our Empire. This mild temperate zone in the Himalayas is " strikingly small, and extends from Northern Bhootan, Northern Nepal (the so-called " Kachar), Northern Kumaon, Gangotri, and Jumnotri, or the provinces of the sources " of the Ganges and Jumna, the western portion of the province of Kunawar, on the " Sutlej, the valley of the River Wangur, the northern Kulu valley, the Beas river, the " Chundra-bhagar, and the Chenab to Kishtwar and Northern Kashmir. At the widest " portion this zone is 15 miles wide, often only two or three, owing to the approximation of " the lofty chains. If one subjected the fauna and flora of this zone to a special and critical " examination, he would find himself scarcely able to separate 50 per cent. good species " from Central European products, and of the remaining 50 per cent., probably the half, if " not more, would prove to be equivalent species.

"There is a peculiar charm when one in his travels far from (real) home sees himself " surrounded by homely familiar forms in a highland country which is still unexplored for " hundreds of square miles, and of which we know nothing, save that it is inhabited by " numerous wandering tribes rich in cows and sheep. We do not yet know the sources of " the Sutlej and Indus. This enormous territory remains still for the inquirer to explore, " who, with the great observer of the coral life of the Pacific Ocean, may observe: 'There " is a noble pleasure in deciphering even one sentence in this book of nature.' "

In this same year, 1866, Stoliczka published (23) a general sketch of the results obtained by his preliminary examination of the Cretaceous Gasteropoda of Southern India. It was not till about two years later, October 1868, that the last fasciculus descriptive of this portion of his work was issued.

In his general remarks we find abundant evidence of the wide and masterly view which he took of the subject he had in hand. He states (24), for instance, that he has been " desirous " to prove of what very great importance the study of the fossil Gasteropoda is, with a view " to classification, having repeatedly had occasion to state that without the knowledge of the " fossil forms no natural grouping of shells can ever be obtained. Sufficient zoological " information was somewhat slowly procured, but this was chiefly due to the little attention " that many palæontologists have paid and still do pay to fossils as *zoological* objects, con- " sidering that the inquiries about them ought to terminate with the discussion of their " *geological* value. These obstacles, however, have now happily abated, and will undoubtedly " soon disappear. Geological research requires the determination of fossils, and palæon- " tology asks for an explanation of the time and conditions under which these fossils lived " in connexion with the state of things prior to that geological formation. All other infor- " mation with regard to fossils can only be obtained from zoological sources."

Again, having discussed the question of the age of the strata containing the Gasteropoda, which, in spite of the occurrence of certain Tertiary forms, he decides to be Upper Cretaceous, and corresponding to the Cenomanian and upwards of the European classification, he says :—

" I entirely reject, however, the argument of some palæontologists that certain genera are " restricted to certain formations. It is clear that a certain type of Gasteropod, which we " call a genus, must have had its first appearance somewhere ; but this is a point which

" experience must settle, or regarding which no statement could have any value excepting " so far as it were justified by our experience limited to a certain date. But to determine ". *a priori* that a genus does not occur below the Tertiary formation, and to start with the " idea that rocks must be *Kainozoic* because they contain a few fossil types not as yet met " below these strata, is simply to impede the progress of science. Field Geology has yet a " great task to solve."

Such a statement as to the inter-dependence of Zoology, Palæontology, and Field Geology, and the necessity of their co-operation, though admitted now, was perhaps never before enunciated so clearly by any authority so competent as Stoliczka. The spectacle of geologists on the one hand and palæontologists on the other striving for the undue pre-eminence of the authority of their own subjects respectively has been too often witnessed.

In the year 1867 Dr. Oldham visited Europe for a few months, taking with him Dr. Stoliczka, for the purpose of affording him an opportunity of visiting various collections of fossils similar to those on which he was at work in India, and also for the purpose of obtaining his assistance in reference to the purchase of specimens which he had been authorised by the Government of India to procure for the Calcutta Museum. They returned to Calcutta in December after this, the only visit paid by Stoliczka to Europe during the 12 years of his Indian service.

A letter by Stoliczka to Hofrath Ritter v. Haidinger (28), descriptive of the return journey, consists of an account of his doings *en route*, and concludes with some remarks on meteorology and the proposal to establish a meteorological department in Calcutta, which were evoked by the observations which he made on the disastrous effects of the cyclone of 1867.

The next year was a busy one for Stoliczka. In May he was appointed, together with the present writer, joint Curator of the Indian Museum during the absence of Dr. John Anderson. As we both had duties at the Geological Survey Office to perform, we attended at the Museum on alternate days, and each took special portions of the collection of what had been the Asiatic Society's Museum, in order to prepare an inventory of the specimens which had been taken over by Government. Our joint work consisted mainly in the preparation of monthly reports for the trustees of the Museum. During the five months in which this work lasted the whole of the very extensive collections were overhauled and checked with the aid of Blyth's Catalogues, and such others as had previously been prepared.

In July 1868 Dr. Stoliczka was appointed Natural History Secretary of the Asiatic Society of Bengal, an honorary post involving much labour and personal sacrifice, owing to the severe editorial duties which belonged to it. In spite of all these duties, over and above the major claim on his time, preferred by his palæontological work for the Survey, he proved himself not only equal to them, but found time to write long letters to correspondents at home, and to prepare for publication various papers on widely different subjects, as will be seen from the following titles: " On the Jurassic deposits in the North-west Himalayas " (25); " On the Andaman Islands " (27); " On *Pangshura tecta* and other species of *Chelonia* from the newer Tertiary deposits of the Nerbudda Valley " (30); " On *Nanina pollux* and *Helix propinqua* " (31); " On *Sagartia schilleriana* and *Membranipora bengalensis* " (32). At this time he commenced, also, a valuable series of papers on the anatomical characters of Indian Mollusca, a subject which had previously been much neglected, although Conchology had received so much attention from numerous writers. The first of this series of papers was entitled " Malacology of Lower Bengal, No. 1, On the genus *Onchidium* " (35).

The following letter * to H. v. Haidinger from Stoliczka contains some account of his life and principal occupations in Calcutta at this period :—

"Our geological results are now being slowly digested; all the Assistants are returned " home from the field and are at work upon their last investigations. The mercantile offices " are often closed on account of the great heat; notwithstanding this, an active life rules in " the Geological Survey Office, hammering and chiselling, mechanical and chemical analysis, " noting and examining, writing and drawing. So it goes on from morning to evening; our " worthy chief, seated in our midst, presides over all.

"We have had now for many days terribly hot weather, daily in the shade 100° F. (30° R.), " often much higher; sometimes there comes a 'north-wester,' like manna fallen from " heaven, and makes the air tolerably cool. This north-west wind during the hot portion of " the year is remarkable. A thick cloud appears in the north-west, and a strong wind begins " to blow from the south-east, turns towards the east, towards the north, and brings rain " from the north-west, and often from the west. The last days of the hot season are usually " especially sultry; however, this year we had frequent storms towards the end. The last " storm was on the 5th, and many clouds collected together on the northern horizon. On " the 6th it remained unchangeable. On the 7th, at 3 o'clock in the morning, it began " to rain like a torrent, though, curiously, altogether without thunder. During this one day " rather more than 5 inches of rain fell, and since it we have seen neither sun nor stars. It " rains incessantly, often very lightly, but one can nevertheless perceive the fine dust; both " yesterday and to-day, for about two hours after 12 o'clock, I saw many pavement stones " dry. It is to be hoped that the weather will on many days be broken, but at intervals " it rains every day. In the ordinary course of things the rainy season comes in about " the middle of June, this is therefore somewhat in advance, but it was acceptable as " the heat was unbearable. It is now prematurely cool, the temperature being only about " 80° F. (21⅓° R.).

"In the past month of May Oldham was elected President of the Asiatic Society by a large " majority; Blanford resigned the general secretaryship; in short, a place on the council " became vacant, and they did me the honour to elect me to the same. Already they had " appointed me Natural History Secretary, and in part I found myself also in the office of " general secretary. A mass of work is connected therewith, but in my proper official time " I officiate in part as Curator of the Indian Museum for Dr. Anderson, who has gone with " the Yunan expedition, the other half is devoted to my work as palæontologist to the Survey. " It is certain that it is as much as a man can do in this hot climate, but one has the conso- " lation that the Government provides for the sustenance of its servants.

"Lately the Government in England appointed a special mining geologist. He has already " arrived, and will, during next winter, examine many of the most important coal fields.

"My summer journey must be given up under the pressure of other work; however, " it is possible that I may go to the Andaman Islands for one or two months, as soon as " Dr. Anderson returns.

"My Gasteropoda are quite ready; but, alas, the ship has not arrived which brings the " paper, and the index cannot, on that account, be printed. This causes a delay of about " two months. I shall now occupy myself with the arrangement of a deep-sea collection,

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* "Arbeiten an dem Geological Survey in Calcutta" (from a letter to Hofrath Ritter v. Haidinger), dated Calcutta, 11th June, 1868.—Ver. der K.K. Geol. Reichs., Wein, 1868, p. 244.

" and soon afterwards attack the bivalves. If the Government approves of our 'Quarterly " Records,' I hope often to make use of the opportunity to report upon many palæontological " subjects under my observation."

An important paper on the Ornithology of the Sutlej Valley (34) was Stoliczka's first contribution to a branch of natural history which he had, it is believed, taken up practically for the first time during his Himalayan journeys. His observations were primarily made on birds seen and obtained during the summer months, from May to October, but having employed natives to shoot for him during the winter, he was enabled to add further notes founded on the information so afforded.*

The introduction to this paper contains a valuable description of the physical features and the distribution of animal and vegetable life throughout the region itself and those bounding it. A German translation of it appeared in Petermanns Mittheilungen in the year 1870. Although too long for insertion here, some extracts will perhaps be sufficient to direct those who are specially interested in the subject to the paper itself.

" The fauna has an essentially Tibetan character. The Kyang, *Equus hemionus*, is very " plentifully met with in a wild state; the Yak, *Poephagus grunniens*, has become domesti- " cated, and is at present very rarely found wild to the south of the Indus; *Ovis ammon*, " *Ovis nahura* (Burrel), *Moschus moschiferus*, and other ruminants are, however, still tolerably " common. *Ursus tibetanus*, *Lynchus europeus*, *Vulpes montanus* and *V. ferrilatus*, *Mustela* " *erminea*, and others are also not rare. Of birds a large number of FRINGILLIDÆ, " RUTICILLINÆ, ALAUDIDÆ, CORVIDÆ, and others, mostly of European type, are to be met " with. As to reptiles and fishes, I have not been able to procure any information, but I " should think they are not specifically very different from those of Western Tibet."

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" The highest peaks in the North-west Himalayan chain rise on an average somewhat " above 22,000 feet, and the limit of snow lies in general at about 17,000 feet, increasing to " about 18,500 feet on the Tibetan slopes.

In the narrow valley Indian tropical plants were found at the base of hills upon which, higher up, the finest cedar and pine forests flourished, while beyond their limit glacial or Alpine plants occurred in the interval up to the edges of the eternal ice and snow.

" The province of Kunawar, in which many of the ornithological observations here recorded " were made, extends from Shipki to Wangtu Bridge (N. lat. 31° 27′ E., long. 78° 3′). A " large portion of this province is situated on the north-eastern declivity of the Central " Himalayan range, and has much Tibetan admixture in its fauna and flora. Travelling " from the Chinese frontier to the west, we soon see the Tibetan *Caragæna* and the *Juniperus* " *squamosa* replaced by the larger *Juniperus excelsa*, *Pinus excelsa*, and a few others; " fine specimens of apricot and poplar trees become abundant, and the first vineyards are to " be observed in the neighbourhood of small cottages." * * * *

" The limit of vegetation almost corresponds with the snow line, lying between 17,000 and " 18,000 feet; the limit of growth of trees being nearly 12,000 feet. We often find at this " limit *Betula bajpaltra*, and in other places *Pinus excelsa*, which ranges almost higher " and extends further into the interior than either *Pinus gerardiana* or *Cedrus deodora*.

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* Dr. Stoliczka's collection of Himalayan birds was subsequently described by Herr A. von Pelzeln in the "Journal für Ornithologie" for 1868, and a translation of the same by Lord Walden was published in the Ibis for 1868, p. 302.

" The eatable pine is, I think, peculiar to the Sutlej Valley, and the seeds are a favourite food " of the rare *Sitta leucopsis*.

" *Fringillidæ*, like *Metoponia pusilla*, *Loxia himalayana*, *Propasser rodochrous*, or *Fre-* " *gilus himalayanus*, are usually found at the limit of trees, where they generally also " breed. * * *

" The fauna of the more western portions of the Sutlej Valley can be viewed under two " somewhat different sections, namely, that of the greater elevations, between 12,000 and " about 6,000 feet, and that of the lesser elevation, 4,000 or 5,000 down to about 1,000 feet.

" The former section includes some of the largest forests of the Himalayan cedar, especially " in the neighbourhood of Nachar, stretching on one side into the Wangur and Baspa " valleys, and on the other along the tops of the hills almost to the immediate vicinity of " Simla. About Guna and Serahan, between 7,000 and 9,000 feet, some of the finest " specimens of the *Ulmus himalayensis*, *Pavia indica*, *Juglans regia*, mulberry, and other " trees occur, besides a thick vegetation of low forests and brushwood. There exists on " these moderate elevations a particularly mild climate; the supply of water is abundant " during the whole year, and some of the places best adapted for cultivation of grain, &c. are " to be found here." * * * *

" The Indian character of the flora and fauna becomes more prevalent the more we " proceed southwards and the more we descend to lower elevations."

The country to which the paper refers extends for 180 miles along the course of the Sutlej from Shipki on the Tibetan frontier to Belaspur.

The number of species of birds recorded amounted to 280, of which several were described as being probably new.

In the year 1869 Stoliczka visited, during a period of three months' leave, portions of Burmah, the Malayan Peninsula, and the Andaman and Nicobar Islands, and in the following year a crop of papers on the malacology, ornithology, reptiles, &c. of these regions appeared in due course; but before mentioning these in further detail, it should be recorded that in 1869 a new subject of investigation presented itself to him, which time did not admit of his pursuing further, as it was his intention to do when sufficient materials should have been accumulated. His first paper on this subject was entitled " A Contribution " towards the knowledge of Indian Arachnoidea " (38), and in 1873 he published another " on the Indian species of Thelyphonus " (66).

Such papers, it may be here noticed, not unfrequently evoked criticism from those specialists who looked upon them as incursions into their special domains; but Stoliczka was generally well enough armed to be able to do battle with his critics, though in the multitude of the subjects which he undertook it was well nigh impossible but that here and there an oversight should occur, which his critics did not fail to detect. These remarks apply, for instance, to several of his ornithological papers, which sometimes contained statements or identifications with which other ornithologists could not agree. In some directions, however, he had probably no peers, and in them no hostile critics were ever heard of.

Other papers which also appeared in 1869 were " Osteological notes on *Oxyglossus pusillus* (*Rana pusillus*, Owen) from the tertiary frog beds in the Island of Bombay " (36), and " Observations regarding the changes of organs in certain mollusca " (37).

Among the above-mentioned results of Stoliczka's visit to the islands of the Bay of Bengal there is to be first noted what might almost be spoken of as one of his regular descriptive letters sent to Vienna and published on this occasion in the Verhandlungen der Geol. Reichsantalt (39). It was addressed, like many others, to Dr. v. Haidinger. From it we

learn that he left Calcutta on the last day of July (1869), and made a short stay at Akyab, then spent a week in Rangoon and 16 days each at Moulmein and Penang. He then had a day at Malacca, eight days in Singapore, and thence proceeded to the Nicobars and on to the Andamans, reaching Calcutta by the 14th of October.

His collections were most abundant as regards fish, mollusca (both marine and land), arachnids, crustacea, &c., and he also obtained some birds' skins by purchase. Although he did little directly in reference to geology, he says, "I am firmly convinced that a geologist "learns more geology on such a journey than if he had worked the same time in the field, I "mean with hammer and chisel." At Akyab he obtained living species of *Lingula*, and his observations on living Tellinas led him to pronounce unfavourably on Deshayes' classification of that genus, and similarly with regard to H. and A. Adams' classification of *Glauconomya* of which he found examples in brackish swamps at Rangoon.

At Moulmein he found a number of land shells living on isolated rocks, each of which showed more or less peculiarities in the species or varieties found within its own particular limits. He says, "I have never seen so splendid an opportunity for determining what a "variety is, and how it becomes a species."

In Burmah he co-operated with Dr. Day, who was engaged in preparing a report on the fish of that country.

Of Penang he says, "To give a description is beyond my powers, I cannot paint a picture "sufficiently beautiful." His letter enumerated his principal acquisitions as he progressed, and he speaks in enthusiastic terms of his success at each of the localities. At Singapore he obtained his first view of coral reefs in all their splendour, but with regard to them and their contents he observed and noted rather than collected. After a few remarks on the new English colony and its surroundings at Camorta in the Nicobars, where he spent but a short time, he relates how he subsequently sent back a collector from Calcutta, who obtained for him a rich harvest of valuable specimens; then, referring to the coral reefs in the Andamans, he writes, "I stood for hours on a sandstone prominence surrounded by coral reefs, observing how the "soft shales (standing almost perpendicularly) between the hard sandstone layers were entirely "washed away, how the living coral had built up in the eroded spaces, and how two wholly "different formations presented themselves to the observer in apparently concordant layers "at a depth of 50 to 60 feet below the level." The shore life, with the distribution of the mollusca, he found most instructive, and mentions some particulars.

He concludes thus, "You will now ask, what will you do with all this material? "What I can I will myself slowly work out, and as soon as I am ready I will deposit a "portion of the collection in our museum here, and a portion in our museum in Vienna. "My ornithological collection must lie by for one or two years. * * * * Firstly, I will in "my private morning time work out the reptiles as far as possible, I have many new "species. Then I shall take up the Moulmein land shells, then a monograph of the "Arachnids of Penang. Next year I will write a monograph on the Penang land shells, "and then on those of the Nicobar and Andaman Islands, and, if possible, work out the "birds. My Arachnids are particularly numerous; I have at least 150 new species, and "many very interesting new genera."

"Of butterflies I have collected none, it was impossible to attend to everything, and of "other insects I have very few; but of Myriapods I have apparently a large number."

He then speaks of the Crustacea which he had given to Mr. Wood-Mason to describe, and of the fish which Dr. Day had examined, and of which he was starting off a large series to Vienna.

The letter concludes finally, like several others, with a brief sketch of the work in the field upon which his colleagues were engaged, and of his own palæontological publications connected with the Survey.

During the year 1870 he published the following papers: "Note on the Kjokkenmoddings " of the Andaman Islands" (41), which was founded on an examination of an old kitchen midden, the results obtained pointing to the existence of a race with some different habits from those of the existing Andamanese; "Note on a few species of Andamanese land shells" (42); "A contribution to Malay Ornithology" (43), of which a critical review by the Marquis of Tweeddale appeared in the Ibis for 1871, p. 158; "Note on three species of " *Batrachia* from Moulmein" (44); and "Malayan *Amphibia* and *Reptilia*" (45).

In spite of these varied occupations, which, it will be observed, did not follow the order predicted in his letter to Dr. v. Haidinger, his palæontological work always occupied the principal part of his time, and, referring to it, Dr. Oldham in his annual report says, "Dr. " Ferdinand Stoliczka, Palæontologist to the Survey, has throughout maintained the same " thorough and indefatigable devotion to the work he has undertaken as has hitherto " distinguished his labours."

In 1871 the following papers and notes were published: "Observations on Indian and " Malayan *Telphusidæ*" (47); On the Anatomy of *Cremnoconchus* (48); "Notes on terres- " trial Mollusca from the neighbourhood of Moulmein, Tenasserim Provinces, with description " of new species" (49); "Notes on some Indian and Burmese Ophidians" (50); "Note on " *Testudo Phayrei*" (51); Tertiary Crabs from Sind and Kach (Cutch) (53).

The following letter to Ritter v. Hauer gives an account of his palæontological work:*

"You will see the next account of our progress in Oldham's Annual Report, which will " be published at the end of this month. Geological surveying continues in all parts of " India, my Himalayan work alone remains still interrupted, and it is not probable that I " shall find time this year to go to Tibet; willingly I made a revision of Spiti, for that " is a key to wider work. Perhaps, when it becomes possible, I will go for three months " to Niti, in Kumaon, where Strachey has done so much work. I hear the Jurassic Beds " are importantly developed there, and the Silurian Beds contain more fossils than in Spiti. " The visit would therefore be specially interesting.

"My *Pelecypoda* are now finally ready. The second portion of the volume I will send " next, and the third part will soon be printed. The whole volume will contain upwards of " 600 pages and 50 plates. I have described 243 species from the South Indian Cretaceous " formation, and made, as far as possible, a complete revision of all the living and fossil genera " of Pelecypodes. The geological result is interesting. There are about 12 per cent. identical " with European species, possibly more, but the identifications are less certain. It is note- " worthy how the geological oyster layers correspond with the European. For example, " *Exogyra ostracina*, *Gryphæa vesicularis*, and *Ostrea ungulata* are in Europe only found " in the chalk, with us also exclusively in the Arrialoor group, while *Exogyra haliotoidea*, " *Gryphæa suborbicularis* (*columba*), *G. vesiculosa*, *Ostrea carinata* lie deeper in Europe, " and similarly in India only occur in the Ootatoor group. Of other characteristic species I

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* "Geologische Arbeiten in Indien" (from a letter to Herr Director v. Hauer, dated Calcutta, 8th March 1871). *Vide* 52.

" can mention to you, *Pholadomya caudata*, Röm, *Cytherea plena*, Sow. *Cardium produc-
" *tum*, *Protocardium hillanum*, Sow, *Eriphyla lenticularis*, Goldf. *Trigonia scabra*, Lam.
" *Inoceramus cripsianus*, and *labiatus*, *Pecten curvatus*, Gein, &c. Not one single species
" corresponds with those of the Gault. What we have are Cenomanian, reaching thence to
" the highest Senonian.

" I hope the revision of the genera of the *Pelecypoda* will contain something useful. I
" have already received many encouraging letters about the *Gasteropoda*, although the
" enumeration must remain very incomplete, but it was the chief reason why I took up the
" *Pelecypoda* with greater zeal.

" During my private time I have written a rather long paper on the tertiary crabs of Sind
" and Cutch. The work is already at press, and the plates have been lithographed; it will
" appear in a special part of the Palæontologia Indica. I describe two species of *Palæocar-*
" *pilius*, 1 *Galenopsis*, 2 *Neptunus*, a new genus of the rare family of the *Leucosidæ*, and
" two are incompletely characterized.

" My zoological work goes slowly forward. I have some remarkable anatomical results
" in the Mollusca, and my paper for this year on this group will nearly take a whole number
" of the Asiatic Society's Journal. I will next describe a new *Comatula*, and to it will add
" some remarks upon the importance of deep sea dredging in the Indian Ocean. We have hope
" that the Government will do something, and that the matter will therefore be undertaken."

This record would be incomplete did it not contain some account of Dr. Stoliczka's social life in Calcutta; for several years he lived in a house in Wood Street, where he was able to give a room to friends visiting him from the country, and had more or less ample accommodation for his collections. This latter qualified statement is made in consequence of the fact that shelves laden with bottles, packing cases, the boxes containing a menagerie of living land shells and occasionally live snakes, besides books and other working materials, crowded his rooms.

Here, in the midst of these surroundings, he entertained his friends, of whom there may be said to have been two classes, one consisting mostly of men who were in a greater or less degree connected with scientific work, and the other of his own compatriots, with whom he identified himself as a leading member of the German club. But this distinction was not sharply defined, as the Germans and other foreign residents included some men of distinction in science, like Drs. Brandis, Schlich, and Kurz, and Stoliczka's frequent invitations to his English friends to entertainments given by the German club served in an important degree to remove any barrier which might exist between the two communities.

Among those of the first-named class who partook of his hospitality and spent hours with him working at his collections, the names of Jerdon, Day, Godwin-Austen, Nevill, Wood-Mason, Waterhouse, Medlicott, Blanford, Theobald, and Waagen, with several others of his colleagues belonging to the Geological Survey, are the most prominent; but besides these there were others too, mostly travellers or occasional visitors to Calcutta, like Brooks and Mandelli. With Allan Hume, too, he was on terms of close intimacy and friendship, and of the high opinion and regard which Mr. Hume entertained for him ample testimony will be found in the pages of "Stray Feathers." Officially, from his position as a Secretary to the Government, he was able to promote Stoliczka's interests in many ways, and he never lost any opportunity which occurred to him of doing so.

The name of another warm friend of Stoliczka should also be mentioned here, namely,

that of Colonel Hyde, Master of the Calcutta Mint, who, as President of the Asiatic Society during a part of Stoliczka's term as Secretary, was very closely connected with him.

In October 1871 Stoliczka visited Cutch, in order to unravel on the spot, by actual examination, some of the doubtful questions as to the distribution of the fossils and the detailed subdivision of the beds belonging to the several formations which occur there. Some of the results which he arrived at are stated in letters addressed to Mr. A. B. Wynne, to whom with thoughtful and characteristic consideration, he wrote, "my admiration for your work " is no less on that account, because you did not discover everything."

He himself never published any account of these results, but some of them are given in the Manual of the Geology of India, and in Dr. Waagen's description of the Cutch fossils which is published in the *Palæontologia Indica*.

In the year 1872, after his return from Cutch, in March, the productive powers of Stoliczka's head and hand, gauged merely by the number of papers which he published, may be said to have reached their maximum, for we find in this year no fewer than 11 distinct communications, of which six were on the *Reptilia* and *Batrachia* of various parts of India, Burmah, and Malayana (54, 55, 56, 57, 58, 59), four consisted of anatomical and other notes upon the land mollusca of the Himalayas, Penang, and Burmah (60, 62, 63, 64), and one paper was devoted to a description of the mammals and birds inhabiting Cutch (61). In the introductory remarks to the last there is, as is usually the case in Stoliczka's papers, a careful description of the physical, climatological, and vegetable conditions characterising the region in which the animals were found. Such remarks are not easy to epitomise, and the following should be regarded rather as a sample than as a *précis*. He commences by saying that " the study of local faunas must, for some time at least, continue one of the most " important means of leading to a full understanding of Indian zoology. India combines " such an enormous variety of physical conditions, namely, differences of level, climate, and " vegetation, all of which have to be studied in connexion with the animal life, that one is " almost lost in the chaos of information required, and is very apt to overlook conditions " which may be essential for the explanation, not only of peculiarities as regards distinction " of species, but also of those relating to geographical distribution."

" The province of Cutch extends for about 150 miles along the tropic of Cancer, having a " breadth of about 40 miles on either side of it, and the meridian of 70° E. longtitude passes " through it a little eastward of the centre. The mainland stretches along the sea coast " from the most eastern branch of the Indus to Kattiwar, from which it is separated by the " Gulf of Cutch; to the north and east it is entirely isolated from Sind and the eastern " Rajputana States by the so-called Run, which was no doubt formerly an arm of the sea, " but is now being much silted up. It has a varied breadth of from 40 to nearly 100 " miles." * * *

" During the rainy season by far the greatest portion of the Run is inundated, and a good " number of the larger water birds are said to be seen on it. The slightly elevated ground " which locally forms strips in the Run proper supports a very scanty vegetation of rough " grasses (*Cyperaceæ*) and of a few scattered bushes of tamarisk, &c.; this part is called the " Buni, and if the monsoons are not heavy, it affords rich pasture for cattle during that " time, but in the dry season even the nomadic Sindees are often obliged to leave it for " want of water."

Then follows a description of the more elevated portions of the area. Of the climate he gives some particulars. The south-west and west winds bring but little moisture to

this parched country. "The ground is so dreadfully heated under the powerful glare " of a rarely covered sky that it seems entirely to prevent the approach of moisture, " unless the atmosphere be near the point of saturation, and this seems indeed to be of very " rare occurrence." In December and January the temperature after mid-day rose to 80° to 90° in the shade, and in February to 100°; the water supply, as might be expected, was bad. " The simple recollection of the foul and dirty fluid that one is occasionally obliged to accept " in order to quench his thirst is enough to make one shudder."

" All these elements of physical condition to which I have briefly referred tend towards " making the country a *terra hospitibus ferox*, an expression often repeated for want of a " more suitable one, or, as an early traveller expressed himself, a country fit only for a " geologist to travel in."

Under all the circumstances described, both the fauna and flora are poor; the latter, in point of numbers, consists chiefly of plants which grow in sandy or saline soils, and as there are no forests, the larger Carnivora, Pachyderms, and Ruminants, and the ordinary feathered denizens of forests, are absent.

Among Mammals the Rodents are most abundant (*Gerbillus*, *Sciurus*, *Lepus*), and next to them the Indian antelope and gazelle, all vegetable feeders.

Of birds, 160 species were obtained, of which about 100 only were regular residents. Of *Reptilia* and *Amphibia* 30 species, and of fresh-water fish 18 species, which it was believed must be nearly the total number existing in this almost riverless region.

In October of this year (1872), Dr. Stoliczka, in company with Dr. Waagen and myself, paid a visit to Darjiling, where he much enjoyed the relaxation from work. During this short trip he made a considerable collection of *Cicadidæ*, intending to write a monograph of the family, but for this he never found time.

Early in the year 1873 an exploring tour to the Andaman and Nicobar Islands was organised by Mr. Allan Hume, who arranged with the British India Steam Navigation Company that one of their steamers, which were in the habit of making the monthly trip from Calcutta to the settlements on these islands, should, in addition to completing its ordinary course, be placed at his disposal for the purpose of visiting the southern islands of the Nicobar group and various outlying islands of the Andaman group, concerning the natural productions of which but little was known. Dr. Stoliczka, Mr. Wood-Mason, assistant curator of the Indian Museum, and the writer were invited to be of the party, and a very enjoyable month was spent in exploring and collecting in these islands. Both Stoliczka and I had previously visited the islands on separate occasions, but as our explorations had not extended far beyond the limits of Port Blair in the Andaman Islands, and Camorta in the Nicobars, we gladly availed ourselves of the unusual facilities thus afforded for making more extended investigations.

We left Calcutta in the steamer "Scotia" on the 1st of March, with a cargo of supplies and convicts for Port Blair. Were there space available, there are ample materials* for giving an extended account of the tour and its results. To these published records I would refer the reader, confidently believing that if he should have an opportunity of reading the first of them, he will derive an amount of interesting information and amusement which will make him feel grateful for the reference.

Somewhat to my surprise, Stoliczka on this occasion gave most of his time to assisting in the main object of the expedition, the investigation of the ornithology, and he was among the

* *Vide* "Stray Feathers, Vol. II, 1874, pp. 29–139, and Jungle Life in India." De la Rue, London, 1880, pp. 356–412.

most energetic of those who shot birds; he paid but little attention to other branches, relying principally upon the collections of invertebrates which were made by his servant. He was in truth "on pleasure bent," and while he thoroughly enjoyed himself, his good fellowship was the cause of not a little of the pleasure from the trip which was derived by others. One incident, of which he was the hero, deserves particular mention, though the facts cannot for want of space be detailed in full here. Having landed, towards evening, with some others of the party on the Island of Meru, one of the Nicobars, he became separated from them and was lost in the jungle. After several attempts by his companions to find him had failed, and news of his loss had been brought to the steamer, a regular search party was organised, and at length, by his replying to our shots, he was discovered about midnight, fairly hemmed in, in the midst of a thorny jungle into which he had wandered.

The joyful news that he was found, and was unhurt, was conveyed to those who were on board by a preconcerted signal discharge of fire-arms, and by three such cheers as it may safely be said were never before heard in that island.

The scene presented in that jungle, when seen by the lurid blue lights which we carried, and as the motley group of English, Indian Lascars, and Nicobarese stood on the white coral strand, is one which is not likely to be forgotten by any of those who were present. As a memento of the occasion we brought away a fine specimen of the gigantic crab known as the cocoa-nut thief, *Birgus latro*, which we interrupted in his nocturnal rambles, and when we had subsequent experience of the tremendous powers of his claws, it was a matter of congratulation that neither Stoliczka nor any one of the relief party had unwittingly placed his foot within their reach. Ominous rustlings in the jungle had caused Stoliczka, after he had given up all hope of finding his way out, to climb up a tree, and it was only when he heard our shots that he descended in order to reply. The crab is now in the Calcutta Museum. Copious doses of quinine which were taken by all the party served, perhaps, to ward off what otherwise might have been the unpleasant consequences of this memorable night's adventure.

After visiting, on the return route, some of the smaller islands lying off the Andamans, the Coeos, Preparis, and the volcanoes of Barren Island and Narcondam, we returned to Calcutta by the end of March.

It had been arranged that Stoliczka, together with some other members of the Geological Survey of India, was to go as a deputation to the Vienna Exhibition in charge of a large collection of minerals and fossils intended to represent the Geology of India.

For Stoliczka it would afford an opportunity of re-visiting his home and seeing and conferring with his scientific friends; it is needless to say, therefore, that he looked forward to it with the utmost pleasure and ardour, but it was not to be, a still greater attraction presented itself. The Government having recently received an Envoy from the newly appointed Atalik, or King of Yarkand and Kashgar, resolved to send a mission with return letters and presents. Mr. Forsyth, now Sir Douglas Forsyth, was chosen as the Ambassador and chief of the mission, and five other officers were selected to complete the number, six, which had been agreed upon with the Envoy as the limit of the party. These five officers were Dr. Bellew, Lieut.-Col. Gordon, and Captains Biddulph, Trotter, and Chapman. Stoliczka's application to the Government to be appointed a member of the mission was not answered for some weeks, and rumour was rife as to whether the authorities would or would not recognise the importance of sending a geologist and naturalist. The difficulty as to the limit to the number of members constituting the mission was, however, got over, and at length, after

some other difficulties had been disposed of, instructions were conveyed to Stoliczka appointing him to the post of naturalist to the Yarkand Mission.

He at once commenced to make the necessary preparations, and clear off arrears of work, by completing the publication of sundry papers which were passing through the press. These included the final fasciculi of his great work on the Cretaceous Fossils of Southern India, which, as already stated, contains nearly 1,500 large quarto pages of letter-press and 176 plates, and several papers on reptiles, arachnids, mollusca, and insects, which were published in Volume XLII of the Journal of the Asiatic Society of Bengal. See Nos. 65, 66, 67, 68, 69. In a paper on the *Passalidæ* which he read before the Society he took occasion to describe the principles of philosophic classification advocated by Dr. Kaup, and the system of rational nomenclature proposed by Prof. Hartwig of Utrecht. The former, with its limit of five species to each genus, encountered some hostile criticism, to which those who were present will remember Stoliczka replied with considerable energy and warmth. While not exactly supporting the system himself, he claimed for it, on account of the respect due to its inventor, careful consideration and examination by the application of test cases. It may be added that an obituary notice of Dr. Kaup appears side by side with that of Dr. Stoliczka in the Ibis for 1874, and the notice there of this artificial system of classification is not favourable.

Regarding the above-mentioned work on the Cretaceous fossils, Dr. Oldham, in his presidential address to the Asiatic Society,* said "These volumes form an invaluable record, "descriptive of one of the finest and most extensive collections from a single formation "which has ever been brought together, and have been prepared with a fulness of illustra- "tion and a widely embracing accuracy of description which render them essential to the "palæontologist and almost equally essential to the recent conchologist.

"We desire to acknowledge the liberality with which the Government of the country has "provided the funds necessary to enable us to double the quantity issued in the year of this "series descriptive of Indian fossils, and we rejoice the more in this because we read it as a "convincing testimony that the loving labours of my colleague Stoliczka are really appre- "ciated. I, who can speak from experience of his unfailing energy, of his untiring research "and marked accuracy, and of his wide range of knowledge of all the bearings of his "subject, know full well the immense labour which these works represent, the high "scientific value of that labour, and the great interest which they have excited among the "palæontologists of Europe. But more than all this, I know, too, and appreciate fully the "unswerving loyalty to his task which the author has invariably shown, and the "undeviating conscientiousness and devotion which he has brought to bear on its "accomplishment."

Early in May information reached Stoliczka that the Government had appointed him naturalist to the mission as above stated, and on the 17th of that month he left Calcutta; but before following him on that journey, from which he never returned, it will be convenient to say a few words as to the materials which exist for giving an account of this portion of his career.

Shortly after the return of the mission and the arrival of the baggage at Simla, in October, the writer was deputed to receive over and take charge of the collections which had been made by Stoliczka. Many packing cases had to be sorted over and their contents roughly classified† in order that the several divisions of the collection might be made over to those who should be appointed to work them out. The results of their respective labours are given

* P.A.S.B., 1873, p. 57.

† Everything of the nature of private property, including purchases made in Yarkand, was set apart and subsequently sent to Vienna to Dr. Stoliczka's brother, his nearest surviving relative.

in this volume, and to any reader of them it will be sufficiently obvious that their value is largely dependent on the full notes and observations which were made by Stoliczka. These notes were contained in diary form in a number of pocket books, and one of the first things to be done was to put everything left in writing into shape for the printer. Some portions, complete in themselves, were printed in the records of the Geological Survey of India, Nos. 75, 76, 77, and 78, and the remainder, forming the diary, were printed for private circulation among those who undertook the scientific description of the collections.

This diary affords most remarkable testimony to the persistent energy with which Stoliczka carried on his observations and made his collections in spite of difficulties under which any one less resolute might have failed.

As 60 large quarto pages of this diary have been thought to be too large an addition to make to this volume, I have been constrained to make a certain number of extracts from it, which will serve to convey some idea of its general character; but I may, perhaps, be permitted to say that I have approached this part of my task with greater reluctance than any other. It is not by any means easy to condense such a diary as this, in which there is no padding and no fine writing, but which bristles throughout with observations on the geology, so far as it could be studied, and the animals and plants which were observed.

His departure from Calcutta is dismissed by Stoliczka in four words: "17th May left Calcutta"; but for those of his friends who were present at the Howrah Station on the night of that day to wish him good bye there was a certain impressiveness in the scene, not so much perhaps because there were any forebodings of evil, but rather because each one realised that during the two years which were expected to elapse before the return of the traveller many events might happen which might make or mar his success; but these events, whether political or otherwise, were all beyond Stoliczka's personal control; in him all confidence was felt, as being a man pre-eminently fitted in every respect for the arduous task he had undertaken.

The diary proceeds to mention a brief visit paid to Simla and his progress thence to Murree, where he remained from the 10th June to the 15th July, with the exception of a few days' run to Changlagali and Dungagali. During this period of a month he was engaged in making final preparations for the journey, while he geologised, shot birds, and busily searched for such land shells and reptiles as the unfavourable season afforded.

Writing to Mr. A. B. Wynne from Murree he refers to the surprise expressed in a letter received from Dr. Oldham at his having elected to go to Yarkand rather than to Vienna, but for his own part he felt regardless of what it might cost him if he could only accomplish all he desired should be done with reference to Central Asian geology and zoology.

On the 15th of July a start was at last effected for Kashmir, and Srinagar was reached on the 27th. *En route* collecting birds and mollusca and observation of the geology progressed steadily, though at Oori he suffered for a day from a sort of sunstroke, from which, however, he rapidly recovered.* While at Srinagar several excursions on the lake enabled observations to be made on the breeding of the water birds which abound there. On the 6th of August, Colonel Gordon having joined the advance party of the mission, marching was resumed. A day's halt at Sonamurg was spent by Stoliczka in the following way; he writes: "I went out "in the morning on the northern slopes of the left bank of the river. They are rather thinly "wooded with deodar, a good deal is low jungle. There are not many birds to be seen "about in the highest forests. *Hemichelidon* is very common; I found the nest with young

* On the road to Srinagar, he met Mr. and Mrs. A. B. Wynne, and expressed to them a doubt as to his ever returning alive.

" birds at the end of a branch of a tree about 40 feet above the ground. *Yunx torquilla* is " decidedly rare. *Sitta* and *Certhia* are not common. An *Alauda* is common here, inter- " mediate in size between *guttata* and *dulcivox*. *Dumeticola affinis* is rare, and another " large bird like *Dumeticola* is also rare. *Phylloscopi* and *Abrornis* were numerous; all had " young. *Motacilla personata*, moderately common, also *Budytes*, *Orocætes cinclorhynchus*, " *Turdus hodgsoni*, two species of *Machlolophus*, &c.

" I got also several shells. A *Bulimus*, mostly found on the currant bushes, which are " rather abundant here in forests; an *Ampullopsis* (*Helicarion*); a small *Rotula*, very like " that found about Murree; a slug like the one I got at Changligali, having the foot " sharply crested; and a species of *Macrochlamys*, or, perhaps, *Zonites*, which is rare; it " resembles *M. petasus*, but grows larger. Afzul Khan brought me a *Phaiomys leucurus* " from about 11,000 feet." From the 14th to 17th, before and after reaching Dras, there were some stiff marches, the elevations crossed rising to 11,800 feet, while the temperature ranged from 38° to 130°. On the 27th the party reached Leh, where a halt was made till the 11th of September. On the 19th the Pangong lake was reached, when observations on the lake were made by the surveyors of the party and the geology was examined by Stoliczka. At Kiam and Pangtung the hot springs were found to have temperatures ranging from 100° to 135°, and a saline efflorescence connected with them consisted of soda and borax.

Besides many birds, a wild yak and several Tibetan antelopes, *Kemas hodgsoni*, were seen between the above places. After the last-named date falls of snow caused much discomfort, but Stoliczka's diary does not dwell upon this, nor even upon a severe attack of spinal meningitis which prostrated him for several days (1st to 6th October) at Kiziljilga. He merely records of it that he had been knocked up by the cold and had to remain nearly the whole time in tent, being therefore unable to observe. He was subsequently distressed at finding this sickness referred to as having been of a serious character in the newspapers, and until Dr. Bellew impressed it upon him, did not realise the danger he had passed through, and the risk which would be involved in a second attack. The temperature here fell to from 10° to 15° below zero, and a few days later the minimum thermometer registered – 33° at midnight, in spite of which, however, he records that a little tortoiseshell butterfly, *Vanessa urticæ*, was caught on the snow.

On the 13th of October the advance party was joined by the main force of the mission under Mr. Forsyth. Stoliczka rode with the others to meet the Ambassador, and remarks, " Strange, " they all thought me very ill or dying " (from the account they had received of his attack). As a matter of fact, however, in the week which had elapsed since his attack he had accomplished much hard work, and had resumed his usual observations.

From Shahidula, which was reached on the 18th, a visit was paid to the famous Jade mines at Karakash, which have supplied the Chinese with this much esteemed mineral since the earliest times. The jade occurs in veins in mica schist, which is associated with syenite. A full account of the mines forms the subject of a special paper (No. 75) which was printed in the Records of the Geological Survey. It is said, on the authority of Mr. Johnson, that the best jade was obtained further east, on the same range, on the road to Khotan.

By means of yaks, which were supplied by Rosi-beg, the headman of the Sanju Kirghiz, the Gidjik or Jujgi pass was crossed on the 23rd. " The Sanju pass is undoubtedly the most " difficult we have had as yet; our last day's camp was about 13,500 feet high, while the " pass is 16,500. The ascent is steep, and though the road is tolerable, the slope was in

" several places on the frozen path very steep, and consequently dangerous. The ridge is " very narrow, only about 10 feet broad at the top; a rugged uneven rock. On the northern " side the pass is very steep for a couple of thousand feet or more, and then the road leads " into an open grassy valley. At the camp wood and grass were procurable." At Sanju there was a halt from the 27th October to 2nd November, during which time Stoliczka obtained a number of birds and made observations on the geology; he mentions, too, the rather curious fact that *Charas*, the well-known intoxicating preparation made from hemp, is sent from thence to India *viâ* Ladak. The people were of a more Aryan type than the Khirgiz, had fair complexions, rosy cheeks, and proved to be of friendly disposition.

On the 8th of November the party reached Yarkand, where they met with a suitable reception from the Dadkhwa, a local functionary (governor) representing the Atalik, who was himself at Kashgar.

Not very much freedom was enjoyed by the party, who appear to have been under a sort of honourable espionage. Stoliczka, however, managed to do some collecting in the neighbourhood of the city, his attention being especially directed to a swamp, where he obtained a number of birds. Of his experiences during the 20 days which the party spent in Yarkand he records some interesting particulars. The following letter to a friend in Vienna gives, however, a more general sketch of his proceedings during that period:—

" * We had a dreadfully cold and difficult journey across the Himalayan Mountains. My " toes were frozen for a whole month, and were not really thawed till we reached Yarkand.

" On the 17th September we left the last village, Tanksi in Ladak, and on the 26th " of October we came to the first village in Turkistan, which was Kiwaz, south of Sanju. " From Sanju to Yarkand there are seven marches, the first five over waste lands with " solitary oases, or rather woods, which are inhabited. The last two marches are in inhabited " country, but nothing grows except by watering. Here, in Yarkand, the climate is almost " European. We receive each day the finest grapes, apples, and pears that you can imagine. " The custom is that the governor sends us each day a '*dastar-khwan*' with fruits, both " fresh and dried, *pilaus*, &c. All these are spread openly upon a carpet, and the guests sit " round about, the knees bent as in a Catholic church. One must not allow the toes to be " seen when sitting, a position which is very uncomfortable—like the Turkish. But one must " in time accustom oneself to all things; one must rejoice that his throat has not been cut. " Such freedom as we have is, of all things, in our situation not to be envied. It is not the " custom to go about the country until one has seen the king. To live within four walls " for 20 days is certainly not agreeable.

" Only this morning the day was fixed for our journey to Kashgar, where the king is. " When we bring the treaty to a conclusion, and as soon as the articles are signed, we have " been promised that we shall go about in the country. We shall remain about two months " in Kashgar, then we hope to receive permission to travel for three months in Turkistan, " and then to return by the Pamir plateau, Badakshan, and Kabul back to India.

" The latter journey will probably be the most interesting. By November or December of " next year I shall be back in Calcutta. I have already a good zoological collection, some " new birds and mammals, and many fish. Geology is very meagre. Here there is nothing " but *löess*. Hills only to be seen in the distance. The air is never clear, being always full " of dust."

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* Reise nach Yarkand (from a letter to Dr. A. Schrauf, dated Yarkand, 28th November, 1873).—Ver. der K.K. Geol. Reichs. 1874, p. 119.

After a farewell feast given by the Dadkhwa on the 27th, marching was resumed on the following day, and on the 4th of December Yangihissar, or Kashghar, was reached, and the party were forthwith summoned to the presence of His Majesty the Atalik, by whom all were well received; but the formal presentation of the letters of the Queen and the Governor General of India, with the accompanying presents, was postponed for about a month, till the 10th of January. During the interval the members of the mission were enabled to go about freely, and Stoliczka availed himself of the liberty to collect and observe in the neighbourhood. He also obtained specimens of some of the large mammals, such as the great sheep, *Ovis karelini*, which were brought in by the inhabitants for sale.

A few days later he started with Colonel Gordon and Captain Trotter on a trip to the Chadirkul, and he then had an opportunity of seeing a number of these noble animals, 130 in one day, of which 85 were in one flock. In this trip the party came under the observation of some Russian-Kirghiz spies, who, however, disappeared at their approach, and nothing more was heard of them.

At Chakmak, the *Toksawa*, or commander of the fort, insisted on their taking with them nine *Kulja* (*Ovis karelini*) and *Tekke*, or ibex (*Capra sibirica*) from his store of winter provisions.

The general results of Stoliczka's geological observations were recorded in papers which he wrote from time to time, some of them, having been forwarded by post, were published as soon as they reached India.

On the 2nd of February the treaty with the Atalik was duly signed, and on the 14th some of the party started on an excursion to Artish and Kalti Ailak, encountering much snow and the inconveniences resulting from delayed baggage during the trip, in which, however, numerous observations on the geology were made. On the 3rd of March Colonel Trotter and Dr. Stoliczka returned to Kashgar, and a few days later it was decided to arrange for the return journey to India, certain visits to coal and other mines which were to have been shown to Stoliczka having been abandoned, apparently on political grounds. The party to which Dr. Stoliczka was attached was instructed to march to India by the Pamir and Kabul.

On the 16th of March they shook hands with the Atalik, and took their leave of Kashgar on the following morning; marching was continued daily till Panjah was reached, on the 14th of April, when, in consequence of the disturbed condition of Kabul, the original intention of returning through that country, *viâ* Badakshan, was relinquished by Colonel Gordon, who was in charge of the detachment from the main camp with which Stoliczka travelled. The route of the Pamir Kulan was adopted, and Panjah was left on the 25th.

As the temperature ameliorated with the advance of the season, gentians and other flowers began to appear, and Stoliczka's notes on the vegetation at various elevations, though of necessity not extensive, are often very interesting.

At Sarikol, which was reached on the 8th of May, Stoliczka records that "he heard to his horror" that they were to return by the same road as that by which they had gone to Yangihissar. It was no doubt a keenly felt disappointment to him to see an opportunity for traversing a new line of country thus put out of reach.

At Pasrobat he found the vegetation more advanced than elsewhere, which he attributed to the effects of numerous hot springs.

On the 21st of June the party re-entered Yarkand, where they remained to the 27th. At this period a new subject is added to those with which Stoliczka's diary previously abounded, this is the nidification of birds, and under this heading there are many valuable observations recorded. At Beshterek he noticed a curious dimorphism on the leaves of a species of

poplar. He says, " I noticed that all the *Populus balsamifera*, which have all their branches " cut off and are much mutilated, have in the lower part of the stems very thin leaves, much " like those of the willow, while the ordinary form of leaves is only seen near the top. I " have taken some branches with two entirely different kinds of leaves. Palæontologists " would make two different genera out of these leaves. Why should these lower leaves be so " narrow ? It is evidently a want of development; some of the poplar bushes have only " these narrow leaves. It is the same thing as with the mulberry when on the lower " undeveloped branches all the leaves are much slit and emarginated."

In a letter to Mr. A. B. Wynne, dated 30th May, he says: " The worst news I can give " you is that I am on my way back, already two marches out of Yarkand, and all this " without having seen Aksu or Farfan; but I went across the Pamir to Wakhan and back " with a party under Colonel Gordon. The geology is all very meagre, nothing but gneiss " and old rocks without fossils; with the exception of a few Triassic and very few Car- " boniferous brachiopods, I got nothing. My volume on the geology of the Yarkand " Embassy will not be a brilliant one, but I intend supplementing it by work to the south " of the Indus, in Rupshu and Spiti, through which I shall return to Simla."

Here and there there are indications in this diary, of which, indeed, other evidence is not wanting, that Stolickza's enthusiasm as a naturalist had become infectious, and that some of his companions had become, to some extent, his competitors in the search for rareties. And though he says occasionally that he should have liked certain specimens which one or other of them had obtained, he did so in the interest of the Indian Museum, where he thought such would be most fittingly preserved.

Kufelang was reached on the 12th of June, and here, so far as is known, he wrote the last letters which were received by any of his correspondents. The following, addressed to the writer of this memoir, arrived in Calcutta but a few days before the news of Stoliczka's death brought sorrow to the hearts of so many of his friends. In it there is no trace of anything but confident resolution as regards the future, but the last paragraph but one gives a slight insight into what he had gone through, and what his sufferings before the final and fatal attack must have been :—

" My Dear Ball, " Kufelang, 12th June 1884.

" Since I answered your letter I got two more of yours. How good of you to write " so regularly; but do not blame me if I am a little tardy; the fact is we often get our " letters in a lump, some a month in advance of others.

" I shall be at Leh about 1st July, write there my preliminary report, leave about the 13th, " and go through Rupshu, Spiti, and Kulu, so as to be at Calcutta about the 1st of November, " when I hope to see you all.

" We had a very tough journey from Yarkand by the Koggar route, first heat, then any " amount of water and cold. Here at the camp you would not find a single flowering plant, " except *Myricaria gallica*, sticking 6 inches above ground; the higher bushes do not " flower at all. Our baggage animals are dreadfully reduced by want of provisions, but we " hope to reach more stores to-morrow at Aktagh. If we do not our animals will be reduced " by half over the Karakoram passes, and our journey a very tough one. With the exception " of a few hot days at Yarkand, I had not a pleasant warm day for the last 10 months, so I " will be glad of a few days' recess at Leh. I hear Shaw is coming up to take his appointment " at Kashgar, the former Envoy to India is coming over to Calcutta, but it is said he will also " proceed to Constantinople.

"I have made a fair zoological collection, and will have at the end of my journey, certainly "materials for two volumes. The geological and palæontological part will be somewhat "meagre, but this cannot be helped when full half the ground was under snow at the time "of my journey.

* * * * * * * *

"I will not be able to do anything for the Asiatic Society of Bengal; I shall have enough "of my own work to prepare for my leave next year. I am afraid I will not be able to go "home before the end of May next.

"I am delighted to hear of such a lot of good work being turned out by the Survey. The "chief (Dr. T. Oldham) will, I hope, have returned by next winter, and also Waagen.

"You ask about Bulram (Stoliczka's bearer). Of course he is with me, and grey, and "looking as old as myself. I can hardly recognise myself; but few know what I suffered in "order only to do some work.

* * * * * * * *

"Please tell Waterhouse to order for the Asiatic Severtzov's "*Turkestanskie Jevotnie*" "immediately, if it is not at the Indian Museum. If they do not like ordering it, order it "for myself through Trübner without delay. Do not forget, please. Stege's death great "loss to me.*

"Ever sincerely yours,
"Ferd. Stoliczka."

In a letter to Mr. A. B. Wynne, written on the same day, he refers to the impracticability of any trade in Salt Range salt to Turkistan being established, as salt is already cheap there, the price being one pice for a pound of small cubic crystals, and seven annas for a donkey load of common efflorescent salt fit for animals.

On the 16th the Karakorum was ascended, and the elevation caused Stoliczka to feel pains in the back of his head, but this is not referred to in the diary.

On the 17th of June the party reached Bursi, and Stoliczka's record of the day's work was as follows :—

"A long march of about 24 miles. First we crossed for several miles the Dipsang plain, "which is utter barren waste, with solitary, low, clumsy hills, probably still belonging to the "Taglang series. Then we ascended towards the watershed of the high plain, crossing "several streams flowing eastward, but which, further on, no doubt, turn round and join "the Shaiok, which flows from the Kundan Glaciers.

"In ascending to the watershed the low, worn-down hills to the west were thickly strewn "with round pieces of whitish or reddish compact limestone, intermingled with boulders, "large and small, of fine grained syenitic gneiss. This must be somewhere *in situ*, near the "head of the watershed. Further on there were many greenstone boulders coming down "from the west, and this rock must also be somewhere up there *in situ*. At last we "descended into a narrow gorge, the sides of which for fully a mile consisted of limestone "conglomerate, the boulders, of white, grey, or black limestone, being well rounded and worn, "and cemented together with a bright red stiff clay; upon this followed rather indifferently

* This gentleman was the captain of a ship, with whom Stoliczka had shared in a mercantile speculation. In a letter to Mr. A. B. Wynne, dated 30th May, he mentioned his financial loss; but as he had no one to provide for, he expressed a mere passing regret that his money was gone, and implied that he would have been satisfied if he only received the zoological collections which Captain Stege was to have made for him.

" bedded, mostly massive white dolomitic limestone, and this was overlain by bluish shales " and well bedded limestone, extending from about six miles south of Bursi to the camp. *I* " *must have a ramble in these limestones to-morrow;* they seem to be triassic, compact with " layers full of small Gasteropods, among which I recognised a *Nerinea*. The so-called " Karakorum stones, *i.e.*, corals, occur in dark shales below the limestones, which are topped " by a yellowish brown well-bedded limestone of ? age; the whole series dips to south-east " at a moderate angle."

Here the diary terminates, for although on the following day a march forward was accomplished, by the evening of that day the power to record the observations was at an end, and we must look to others to furnish the details of what took place during the few hours which remained of Dr. Stoliczka's life and labours on earth.

Towards the end of June a short note from Mr. Allan Hume conveyed to us in Calcutta the sad news, which had been sent by telegraph to the Foreign Office at Simla, that Dr. Stoliczka was dead. In due course the post brought an official announcement from Colonel Gordon, addressed to Mr. H. B. Medlicott, who was at that time Acting Superintendent of the Geological Survey of India.

Colonel Gordon describes in this letter, in sympathetic language, the circumstances attending the death, but the facts are given somewhat more in detail by Captain Trotter, who wrote to Captain Chapman on the same date (19th June), for the information of the advance party under Mr. Forsyth.

This letter bears testimony to the kindness with which those who were present attended Stoliczka in his last moments. For the writer, Captain Trotter, Stoliczka had expressed the greatest regard in some of the letters which he had written to his friends in India, and that the esteem was heartily reciprocated is fully apparent in the lines which follow:

" My Dear Chapman, Camp Murghi, June 19, 1874.

" Col. Gordon is writing to Mr. Forsyth the melancholy intelligence about poor " Stoliczka, but you may all of you like to hear more details about his last illness than the " Colonel will have time to write.

" On the 16th, the day we crossed the Karakorum, he complained of head-ache, the pain " being at the back of his head, but as he had suffered from head-ache more or less on every " occasion of going up to a great height, I did not think anything of the circumstance nor " of its continuation.

" On the 17th we crossed the Dipsang plains, and were still, as you know, on very high " ground.

" On the 18th (yesterday) he started on horseback early in the morning to examine some " rocks up the stream which joins the main river at Burchae, and joined us at breakfast " halfway between Burchae and this. He was then looking fagged and complained of his " head on arrival here. About noon he lay down, and very shortly commenced to breath " very heavily and coughed a good deal and spat; his head and hands were very hot, and his " pulse beat very rapidly and strongly. He complained much of pain in his neck and the " back of his head, and on my advice he put on two mustard plasters, one on his neck and " the other on his chest. They did not, however, appear to give much relief. In the even- " ing the cough was very bad, and the native doctor made up some mixture to relieve the " irritation which caused the cough, which, however, continued all night.

" In the morning the cough was much subdued, but he appeared much exhausted and " scarcely conscious. From the previous evening he had spoken nothing but an occasional

" monosyllable in answer to questions put to him. He would generally, however, take no
" notice of anything said to him. I twice asked him this morning if he still had pain in his
" neck, to which he replied, no.

" The native doctor appeared to think that he was suffering from acute bronchitis and
" inflammation of the lungs, but from what Biddulph and myself had seen of his previous
" illness, it was clear that the disease was the same as the former one, viz., what is known
" as spinal meningitis. On the doctor's advice, however, a blister was placed this morning on
" his right side. He continued up till noon in a semi-unconscious state, occasionally taking
" a little chicken broth and a little brandy mixed up in the cough mixture. He did not
" appear to be better or worse, generally making about 50 respirations in the minute,
" irregular, however, and very often alternately deep and heavy and short and light; the
" respiration throughout the day was always accompanied by a rattling noise, somewhat
" resembling that of a ripple on the sea shore or the noise of a troop file-firing in the distance.
" Later it appeared to me that the rattle was more continuous, although less loud, and the
" breathing somewhat easier.

" About 2 p.m. he made a gesture that he wanted to sit up; he was accordingly moved to a
" chair and I gave him some port wine, but his appearance was so ghastly and he was in such
" a state of exhaustion that I called in Biddulph from the next tent. B., thinking him worse,
" fetched Col. Gordon. Meanwhile, he was moved back to his bed; he tried to sit up, and I
" got behind him to support him. Meanwhile the Colonel came in. The rattling noise
" ceased, but he still breathed deeply; his respiration grew slower and slower, as also did his
" pulse, and he finally breathed his last, dying so quietly that it was impossible to say at
" what precise instant he passed away. There was no struggle, and he died apparently
" without pain, a quiet and peaceful expression remaining on his countenance after death.

" From the time he came in yesterday until he passed away he hardly spoke a word, and
" conversation was, of course, impossible. Occasionally, when looking at me, I would
" observe a very anxious expression of countenance, from which I inferred that he was
" aware of his critical position. In fact, in previous conversations, weeks before, he told me
" that a second attack of meningitis would be his certain death, it being rare that a first
" attack is recovered from. He took great precautions in clothing, &c. to prevent his
" getting a chill, but the passage of the Karakorum brought on that which he was so anxious
" to avoid. I cannot help thinking that the height had much to do with it, at all events
" aggravated the symptoms; he had been exposed to far greater cold on the Pamir trip, but
" without the same elevation, and he had not suffered.

" Apart from the bitter regret that we must all feel at the loss of one who has been our
" constant companion for so many months, the loss to the scientific world will be very great.
" He made copious notes during our trip to the Pamir, but no one will have the knowledge
" to utilise them as he would have done himself, and it is possible that they may not be in a
" shape to enable an outsider to make competent use of them, and his intended geological
" observations between Leh and Simla would, with his previous investigations of Himalayan
" geology, a subject with which he was, perhaps, better acquainted than any man living, have
" enabled him to write a most complete and valuable report. I can hardly yet realise his
" loss, it has been so sudden and unexpected. It is a most melancholy termination to our
" trip, which would otherwise have been so successful.

" There was, as I told you, no opportunity for him to communicate his wishes or to send
" messages to his family. From yesterday evening he has been in a state of semi-uncon-

" sciousness, and evidently unable to collect his thoughts, even if he had been able to speak.
" Had I known the names or addresses of any of his relatives, I would have written. Should
" you or Bellew know, you might forward them this letter in order that they may have some
" account of his last moments. He could not have passed away more quietly, and the calm
" and peaceful expression of his countenance after death showed, I think conclusively, that
" the latter had no terrors for him.

" Believe me,
" Yours sincerely,
" HENRY TROTTER."

Colonel Gordon, in his letter to Mr. Medlicott above referred to, states that he had at once sent off the body in charge of a company of Tartar horsemen, who were instructed to travel night and day, to Leh, which was still 11 marches off. They reached Leh on the evening of the 23rd, the departure of Mr. Forsyth's party having been delayed in order that the members of the mission might be present at the funeral, the circumstances connected with which are related in the following letter from Captain Chapman to Mr. H. B. Medlicott.

" Camp Lama Yaru,
*" DEAR SIR, June 27, 1874.

" IT will, I think, be a satisfaction to you to hear the arrangements that we in Leh
" made for the reception of poor Stoliczka's remains, and to learn that the interment took
" place on the 23rd instant with all outward tokens of respect.

" The procession, which was escorted by a company of horsemen, reached Leh on the
" evening of the 23rd, and was met at the entrance to the compound of the British Joint
" Commissioner by Mr. Forsyth and the officers of the mission, who were all in uniform.
" The body was at first placed in a room of the rest house which stands in Capt.
" Molloy's garden, and Dr. Bellew made a post-mortem examination, which proved that
" death had resulted in consequence of over-exertion in strenuous endeavours after informa-
" tion, and the great height at which Gordon's detachment journeyed.

" After the coffin was closed, the Union Jack was spread over it, and it was borne by six
" soldiers to the grave. The interment was attended by the whole of the followers of the
" mission, natives, Mahomedans, Sikhs, and Tartars, and the greatest sympathy was shown
" on the occasion. The burial service was read by Mr. Forsyth. Besides us, there were
" present Capt. Molloy, the British Joint Commissioner, Mr. Johnson, Wazir of Ladak, and
" Capt. Carre, R.H.A. The grave, of stone work, was situated in a willow plantation in a
" garden next the house of Capt. Molloy. The place where we laid our much lamented
" companion to rest will certainly be at all times maintained and cared for. It was to all of
" us a sad gratification to have the opportunity of showing the last proof of our respect and
" affection for him; the sorrow and pain that we feel at his loss will be to each of us of long
" duration.

" I have, at this distance, no opportunity of sending papers with the customary notice for
" his friends' information. I also do not know poor Stoliczka's age; will you, therefore,
" have the goodness to do what is necessary for me."

" Your most obedient servant,
" E. F. CHAPMAN."

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* The original of this letter not being available, it has been re-translated from a German translation published in Ver. der K. K. Geol. Reichs. Wein, 1874, p. 284). This will account for verbal differences.

Deep and widespread was the grief caused by the sad intelligence conveyed in these letters. Ample testimony of the esteem which was felt, both for the personal qualities and the scientific ability of the deceased, will be found in the numerous obituary notices, references to some of the more important of which, omitting those in the daily press, will be found below.†

The Government of India in due course took steps to place a suitable inscription over the grave, by means of which their high appreciation of Dr. Stoliczka as a public servant and as a man of science was fully recorded. The Austrian Government voted 100*l.* for the purpose of having a bust executed for Vienna of one who as an Austrian subject had by his distinguished career done honour to the country of his birth, as well as to that of his adoption.

The Asiatic Society of Bengal, remembering the eminent services of their Natural History Secretary, lost no time in forming a committee for the purpose of collecting subscriptions in order to perpetuate Dr. Stoliczka's memory at the scene of his principal labours. To their appeal for this purpose a ready and generous response was made, and a sum of nearly 350*l.* was collected, part of which was expended in obtaining a marble bust, which now stands near the entrance of the Indian Museum in Calcutta, and the remainder was devoted to procuring a painted portrait, which is hung in the apartments of the Asiatic Society of Bengal.

It needs not that this narrative should conclude with any special panegyrics on the merits of the scientific work accomplished by Dr. Stoliczka. The story of his short and active life which has been set forth in these pages, much of it being told in his own words, will enable readers of it who had not the privilege of knowing him to form their own opinion and pass judgment on the facts herein set forth. If this memoir has been written as the subject deserved that it should be written, those whose knowledge of the man dates only from the reading of these pages can scarcely fail to join in the chorus of testimony which unanimously declared the loss science had suffered by his untimely death at the age of only 36. It avails not to speculate now upon what has been lost to the world by the sudden cessation of the work which proceeded from that well stored and industrious brain. But while we give Dr. Stoliczka's memory all honour for the great work which he accomplished, we must not, nay cannot, omit to accord the still higher honour which should belong to the memory of one of so unselfish, generous, and upright a character, and of whom it can truly be said that though he was at times subject to causes of irritation arising from the severity of the climate and from ill-health, and though his superior judgment in scientific matters might have tempted him to be severe, still his published and unpublished letters, no less than his printed papers, are totally devoid of anything which could cause annoyance to any of his contemporaries.

As an author and scientific authority it is perhaps not too much to say that he might have secured for himself a wider reputation if he had published more largely in European journals, and if he had become a contributing member of some of the scientific societies in London;

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† Obituary Notices of Dr. Stoliczka.

By Col. Hyde, President, A.S.B., and Mr. H. B. Medlicott, Proc. As. Socy. Bengal, 1874, p. 153.

Verhandlungen der K. K. Geologischen Reichsanstalt, 1874, pp. 253 and 279.

By Dr. T. Oldham. Annual Report of the Geological Survey of India: Rec. Geol. Survey of India, Vol. VIII, 1875, p. 1.

By Mr. H. B. Medlicott. Records of the Geological Survey of India, Vol. VII, p. 81.

Geological Magazine, Decade II, Vol. I, 1874, p. 382.

Ibis, 3rd Series, Vol. IV, p. 470.

By Mr. W. T. Blanford. "Nature," X, p. 185.

but he never swerved in his loyalty and efforts to raise the standard of the scientific periodicals of the country of his adoption. Whatever of his was published in Europe during his Indian career consisted either of old work done in Austria or of *resumés* sufficient merely to indicate the scope and results given in full in Indian publications.

As he won for himself the esteem and regard of those who surrounded him in his last moments, but who a few months previously had been all unknown to him, so also he obtained the sincere and hearty friendship of many wherever he went. In the majority of cases these friendships were maintained on both sides by frequent and sympathetic correspondence, and were only terminated on that fatal morning of the 19th of June 1874.

CATALOGUE OF 79 SCIENTIFIC PAPERS AND PUBLISHED LETTERS WRITTEN BY DR. F. STOLICZKA BETWEEN THE YEARS 1859 AND 1874, INCLUSIVE.

1. 1859. Ueber eine der Kreide-formation angehorige Süsswasserbildung in den Nordöstlichen Alpen. Wien. Sitz. Ber. XXXVIII, 1859, p. 482.

2. 1861. Ueber die Gastropoden und Acephalen der Hierlatz-Schichten (1860). Wien. Sitz. Ber. XLIII, (Abth. 1), 1861, p. 157.

3. 1861–62. Tertiar Petrefacten aus dem Südalpen. Wien. Geol. Verhandl. XII, 1861–62, p. 16.

4. 1861–62. Ueber das eigenthümliche Auftreten Crystallinischer Schiefergebilde im Südwestlichsten Ungarn. Wien. Geol. Verhandl. XII, 1861, 1862, p. 114.

5. 1861–62. Die Geologischen Verhältnisse der Bezirke des Oguliner und der Sudlichen Compagnien des Szluiner Regimentes in der Karlstädter K. K. Militärgrenze. Wien. Jahrb. Geol. XI, 1861–62, p. 526.

6. 1862. Oligocæne Bryozoen von Latdorf in Bernburg (1861). Wien. Sitz. Ber. XLV, Abth. 1, 1862, p. 71.

7. 1862. Ueber heteromorphe Zellenbildungen bei Bryozoen (*Cœlophyma*, Reuss.). Wien. Zool. Bot. Ver. Verhandl. XII, 1862 (*Abh.*), p. 101.

8. 1862. Beitrag zur Kentniss der Molluskenfauna der Cerithien- und Inzersdorfer Schichten des Ungarischen Tertiarbeckens. Wien. Zool. Bot. Ver. Verhandl. XII, 1862, Abh., p. 529.

9. 1863. Bericht uber die in Sommer 1861 durchgeführte Uebersichtsaufnahme des Sudwestlichsten Theiles von Ungarn. (1862). Wien. Jahrb. Geol. XIII, 1863, p. 1.

10. 1863. Ueber das eigenthumliche Auftreten crystallinischer Schiefer-Gebilde im Sudwestlichen Ungarn. Pressburg. Corresp. Blatt. II, 1863, p. 76.

11. 1864. Critische Bemerkungen zu Herrn. Fr. A. Römers Beschreibung der Norddeutschen tertiären Polyparien. Neues Jahrb. Mineral. 1864, p. 340.

12. 1864. Note on *Lagomys curzoniæ*. J. A. S. B., Vol. XXXIV, Pt. II, p. 108.

13. 1865. On the Character of the *Cephalopoda* of the South Indian Cretaceous rocks. Geol. Soc. Quart. Jour., XXI, 1865, p. 407. Phil. Mag., XXIX, 1865, p. 550. Wien. Verhandl. Geol., XV, 1865, p. 17.

14. 1865. Geologische Schreiben aus Simla (1864). Wien. Sitz. Ber., Vol. L, 1865, p. 379.

15. 1865. Geological Sections across the Himalayan Mountains from Wangtu Bridge on the River Sutlej to Sungdo on the Indus; with an account of the formations in Spiti; accompanied by a revision of all known fossils from that district. Mem. Geological Survey of India, Vol. V, pp. 1–152.

16. 1866. Summary of Geological Observations during a visit to the Provinces Rupshu, Karnag, South Ladak, Zanskar, Surzoo, and Dras of Western Tibet in 1865. (Dated Calcutta, March 1866.) Mem. G. S. I., Vol. V., pp. 337-354.

17. 1866. Eine Revision der Gastropoden der Gosauschichten in den Ostalpen. Wien. Sitz. Ber. LII, 1866, p. 104.

18. 1866. Geologische Schreiben aus Kaschmir. Wien. Sitz. Ber., LII, 1866, p. 664.

19. 1866. Einige Betrachtungen über den Charakter der Flora und Fauna in der Umgebung von Chini, Provinz Bisahir, im Nordwestlichen Himalaya Gebirge. Wien. Zool. Bot. Verhandl., XVI, 1866 (Abh.), p. 849.

20. 1866. Catalogue of the specimens of Meteoric Stones and Irons in the Museum of the Asiatic Society of Bengal, Calcutta, corrected up to July 1866. Stoliczka, Dr. F., and Blanford, H. F. J. A. S. B., Vol. XXXV, Part II, p. 43.

21. 1863–1866. Cretaceous Fauna of Southern India. Pal. Ind. I. The Cephalopoda. 13 parts. (*Belemnitidæ* and *Nautilidæ* by H. F. Blanford, pp. 1–40, pls. 25.) *Ammonitidæ*, pp. 41–216, pls. 69 (six double).

22. 1866. Additional observations regarding the Cephalopodous fauna of the South Indian Cretaceous deposits. Rec. Geol. Survey of India, Vol. I, p. 32.

23. 1866. General results obtained from an examination of the Gastropodous fauna of the South Indian Cretaceous deposits. Rec. G. S. I., Vol. I, p. 55.

24. 1867–1868. Cretaceous fauna of Southern India. Pal. Ind. II. *Gastropoda*, pp. xiii–500, plates 28.

25. 1868. On Jurassic deposits in the North-west Himalaya. Geol. Soc. Quart. Jour., XXIV, 1868, p. 506.

26. 1868. Calcutta Schreiben an Herrn Hofrath Ritter v. Haidinger 20 Jänner 1868. Wien. Verhandl. Geol., 1868, p. 94.

27. 1868. Die Andaman Insel, Assam, u.s.w. Wien. Verhandl. Geol., 1868, p. 192.

28. 1868. Arbeiten an dem Geological Survey in Calcutta (aus einem Schreiben an Herrn Hofrath Ritter v. Haidinger, Calcutta, 11 Juni). Wien. Verhandl. Geol., 1868, p. 244.

29. 1868. Naturwissenschaftlichen Arbeiten in Indien (aus einem Schreiben an Herrn. Hofrath Ritter v. Haidinger, Calcutta, 15 Nov. 1868). Wien. Verhandl. Geol., 1868, p. 415.

30. 1868. Note on *Pangshura tecta* and the other species of *Chelonia* from the newer Tertiary deposits of the Nerbudda Valley. Rec. G. S. I., Vol. II, p. 36.

31. 1868. On *Nanina pollux* and *Helix propinqua*. P. A. S. B., 1868, p. 263.

32. 1868. On the anatomy of *Sagartia schilleriana* and *Membranipora bengalensis*. P. A. S. B., 1868, p. 275, and J. A. S. B., XXXVII, Part II., p. 28.

33. 1868. On the eclipse of 18th August 1868. P. A. S. B., 1868, p. 275.

34. 1868. Ornithological Observations in the Sutlej Valley, N.W. Himalayas. J. A. S. B., XXXVII, Part II., p. 1. Introduction translated and reprinted in Petermans Mittheilungen, XVI, 1870, p. 8.

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36. 1869. Osteological notes on *Oxyglossus pusillus* (*Rana pusilla*, Owen) from the Tertiary frog beds in the Island of Bombay. Mem. G. S. I., Vol. VI, p. 387.

37. 1869. Observations regarding the changes of Organs in certain Mollusca. P. A. S. B., 1869, p. 187.

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40. 1870. Observations on *Chamæleo vulgaris*. P. A. S. B., 1870, p. 1.

41. 1870. Note on the Kjokkenmoddings of the Andaman Islands. P. A. S. B., 1870, p. 13.

42. 1870. Note on a few species of Andamanese land shells. P. A. S. B., 1870, 86.

43. 1870. A contribution to Malay Ornithology. P. A. S. B., 1870, p. 237. J. A. S. B., XXXIX, Part II, p. 277.

44. 1870. Note on three species of *Batrachia* from Moulmein. P. A. S. B., 1870, p. 272.

45. 1870. Malayan *Amphibia* and *Reptilia*. P. A. S. B., 1870, p. 103. J. A. S. B., XXXIX, Part II, p. 134. Ann. Mag. Nat. Hist. VI, 1870, p. 105.

46. 1870–1871. Cretaceous fauna of Southern India. Pal. Ind. III. *Pelecypoda*, pp. xxii. and 537.

47. 1871. Observation on Indian and Malayan *Telphusidæ*. P. A. S. B., 1871, p. 84.

48. 1871. On the anatomy of *Cremnoconchus*. P. A. S. B., 1871, p. 108.

49. 1871. Notes on terrestrial Mollusca from the neighbourhood of Moulmein (Tenasserim Provinces) with descriptions of new species. J. A. S. B., XL, Part II, pp. 143, 217.

50. 1871. Notes on some Indian and Burmese ophidians. P. A. S. B., 1871, p. 191. J. A. S. B., XL, Part II, p. 421.

51. 1871. Note on *Testudo phayrei*, Ann. Mag. Nat. Hist., VIII, 1871, p. 212.

52. 1871. Geologische Arbeiten in Indien. Wein. Verhandl. Geol., 1871, p. 109.

53. 1871. Tertiary Crabs from Sind and Kach. Pal. Ind. pp. 16, pls. 5.

54. 1872. Notes on the Reptilian and Amphibian fauna of Kach (Cutch). P. A. S. B., 1872, p. 71.

55. 1872. Notes on Reptiles collected by Surgeon F. Day in Sind. P. A. S. B., 1872, p. 85.

56. 1872. Observations on Indian *Batrachia*. P. A. S. B., 1872, p. 101.

57. 1872. Notes on some new species of *Reptilia* and *Amphibia* collected by Dr. W. Waagen in N.W. Punjab. P. A. S. B., 1872, p. 124.

58. 1872. Note on a few Burmese species of *Sauria*, *Ophidia* and *Batrachia*. P. A. S. B., 1872, p. 143.

59. 1872. Notes on various new or little known Indian Lizards. P. A. S. B., 1871, p. 192. J. A. S. B. XLI, Pt. II, 86–117.

60. 1872. Postscript to the monograph of Himalayan and Burmese *Clausiliæ*. J. A. S. B., XLI, Part II, p. 207.

61. 1872. Notice of the mammals and birds inhabiting Kach (Cutch). P. A. S. B., 1872, p. 211. J. A. S. B., XLI, Part II, p. 211.

62. 1872. On the land shells of Penang Island, with descriptions of the animals, and Anatomical Notes. Part 1st, *Cyclostomacea*. J. A. S. B., XLI, Part II, p. 261.

63. 1872. F. Stoliczka and W. Theobald. Notes on Burmese and Arakanese land shells, with descriptions of a few species. J. A. S. B., XLI, Part II, p. 329.

64. 1873. On the land shells of Penang Island, with descriptions of the animals, and Anatomical Notes. Part II. *Helicacea*. Pls. I.–III. J. A. S. B., XLII, Part II, p. 11.

65. 1873. Notes on some species of Malayan *Amphibia* and *Reptilia*. J. A. S. B., XLII, Part II, p. 111.

66. 1873. Notes on the Indian species of *Thelyphonus*. J. A. S. B., XLII, Part II, p. 126.

67. 1873. Contribution towards a monograph of the Indian *Passalidæ*. J. A. S. B., XLII, Part II, p. 102, and P. A. S. B., 1873, p. 112. (Kaup's theory.)

68. 1873. Description of two new species of Indian land shells. J. A. S. B., XLII, Part II, p. 169.

69. 1873. Note on some Andamanese and Nicobarese Reptiles, with the description of three new species of Lizards. J. A. S. B., XLII, Part II, p. 162.

70. 1872–1873. Cretaceous fauna of Southern India. IV. *Brachiopoda*, *Ciliopoda*, *Echinodermata*, Corals, &c. Pal. Ind., pp. v. and 202. Plates 29. [Total for the four parts, pp. xl. and 1414. Plates 176.]

71. 1874. Letter to the Editor of Stray Feathers, dated Leh, 10th September 1873. Calcutta S. F., Vol. II, 1874, p. 461.

72. 1874. Letter to the Editor of Stray Feathers, dated Panja Wakhan, 25th March 1874. Calcutta, S. F., Vol. II, 1874, p. 463.

73. 1874. A brief account of the geological structure of the hill-ranges between the Indus Valley in Ladak and Shah-i-dula on the frontier of the Yarkand territory. Rec. G. S. I., Vol. VII, p. 12.

74. 1874. Geological notes on the route traversed by the Yarkand Embassy from Shah-i-dula to Yarkand and Kashgar. Rec. G. S. I., Vol. VII, p. 49. *See also* Jour. Geol. Soc. London, Vol. XXX, 1874, and Geol. Magazine, 1874, p. 430.

75. 1874. Note regarding the occurrence of Jade in the Karakash Valley, on the southern borders of Turkistan. Rec. G. S. I., Vol. VII, p. 51. *See also* Jour. Geol. Soc. London, Vol. XXX, 1874, and Geol. Magazine, 1874, p. 330.

76. 1874. Geological observations made on a visit to the Chaderkul, Thian Shan range. Calcutta. Rec. G. S. I., Vol. VII, p. 81. *See also* Jour. Geol. Soc. London, Vol. XXXI, 1874, and Geol. Mag., 1874, p. 29.

77. 1874. Note on the Pamir. Calcutta. Rec. G. S. I., Vol. VII, p. 86.

78. 1874. Reise nach Yarkund (aus einen Schreiben an Herrn Dr. A. Schrauf. Yarkand, 28 Nov. 1873). Wien Verhandl. Geol. 1874, p. 119.

79. 1875. The Altum Artush considered from a geological point of view. Calcutta. Rec. G. S. I., Vol. VIII, p. 13.

SCIENTIFIC RESULTS

OF

THE SECOND YARKAND MISSION;

BASED UPON THE COLLECTIONS AND NOTES

OF THE LATE

FERDINAND STOLICKZA, PH.D.

MAMMALIA,

BY

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(CHIROPTERA BY G. E. DOBSON, M. A., M. B.)

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CONTENTS.

SCIENTIFIC RESULTS

OF

THE SECOND YARKAND MISSION.

MAMMALIA.

By W. T. BLANFORD.

THE following notes upon the specimens of mammalia collected by the late Dr. Stoliczka when accompanying the mission sent by the Government of India in 1873-74 to Káshghar [1] must be considered as only a contribution to the zoology of the countries traversed. Some additions have been made from the collections obtained by Dr. Henderson, who accompanied a former mission to Yárkand, and by Dr. J. Scully, who visited Eastern Turkestan as Medical Officer with Mr. R. B. Shaw, the Political Agent, despatched by the Government of India in 1874-75 to visit the Amir of Káshghar. It is, however, impossible to give anything like a complete list of the mammalia inhabiting Eastern Turkestan, the Pámir, and Wakhán. Even of Ladák, which is easy of access, and yearly traversed by English sportsmen and travellers, although the larger animals are known, much additional information will probably be necessary before we obtain a complete acquaintance with the smaller forms. The fact that, amongst the mammals collected in Ladák by Dr. Stoliczka, four (a shrew, a vole, a mouse, and a *Lagomys*) were previously unknown, and two others incorrectly identified, renders it probable that several more remain to be determined. The works of previous travellers give but imperfect information on the zoology of Ladák; and Dr. Stoliczka, in former years, proposed to write a general work on the animals and plants of Western Tibet, an intention which unfortunately he did not live to carry out. The present writer lies under the disadvantage of being unacquainted with the country; and it is almost impossible to do justice to the important questions of distribution and range without having visited the region inhabited by the fauna described.

[1] The practice of using the name of 'Yárkand,' which really applies only to a city, for the whole of Eastern Turkestan, although quite erroneous, has become too common amongst English writers, and in official reports, to be easily superseded. An attempt has been made to substitute the term 'Káshgharia,' but it has not been successful. The proper name of the region comprising the cities of Káshghar, Yárkand, Khoten, Aksu, &c., is Eastern Turkestan; and as the country has now once more fallen into the hands of the Chinese, the old term 'Chinese Turkestan' is again applicable. It is to be regretted that the name 'Yárkand Mission' tends to support a geographical error. The spelling of 'Káshghar' is doubtful; it is sometimes spelt 'Káshkar' or 'Káshqar.'

The districts traversed by the Yárkand Mission,[1] although all, with the exception of Kashmir, where a mixture of Indian (Oriental) forms is found, within the limits of the Palæarctic region, still belong to different sub-provinces, distinguished chiefly by their physical characters, and especially by their elevation. Western Tibet or Ladák, in which may be included all the area north of Kashmir drained by the Indus and its tributaries, is a part of the high barren Tibetan plateau, and the fauna comprises typically Alpine forms, such as wild sheep and ibex, marmots, and *Lagomys*. The fauna inhabiting the ranges commonly known as the Kuenlun, intervening between the northern watershed of the Indus and the low plains of Turkestan, is very similar to that of Tibet proper, but several species appear different. The animals of the plains of Eastern Turkestan around Yárkand and Káshghar belong to very distinct types, and appertain to the desert fauna of Central Asia, characterized especially by the abundance of rodents, such as *Gerbillus*, *Cricetus*, and *Dipus*. The few specimens of the mammals inhabiting the Thian Shan range, Pámir, and Wakhán contained in Dr. Stoliczka's collection are insufficient to give much idea of the fauna, as they were collected under great difficulties, during journeys when the ground was for the most part covered with deep snow. The fauna of each of the zoological sub-provinces traversed will, however, need a few remarks: these sub-provinces are—

I.—Kashmir and the Punjab hills.
II.—Western Tibet, or Ladák.
III.—Kuenlun.
IV.—Plains of Eastern Turkestan.
V.—Ranges west and north of Yárkand and Káshghar, including Sarikol, the Pámir, Wakhán, and the Thian Shan.

The last should very possibly be subdivided. It is certain that the wild sheep and hare of the Pámir differ from those of the mountains north of Káshghar, and many of the species of mammals inhabiting the mountain ranges of Central Asia appear to have a restricted range.

Eastern Turkestan has been visited, in modern times by but few European travellers. The most important of these, apart from the members of the two missions under Sir Douglas

[1] The route followed is described in detail in the official "Report of a Mission to Yárkand in 1873 under command of Sir T. D. Forsyth, K. C. S. I., C. B.," Calcutta, 1875; and represented on a map published with the report and compiled by Captain H. Trotter, R.E., of the Great Trigonometrical Survey of India, one of the officers attached to the Mission. An account of the journey, and many observations on the fauna, will also be given in Dr. Stoliczka's diary, to be published uniformly with the present and other scientific results.

Briefly, the following was the line of march. Starting from Murree (Mari) in the Punjab hills, on the 15th July 1873, the party of the Mission to which Dr. Stoliczka was attached proceeded to Srinagar in Kashmir, and thence across the Zoji-la, and by Drás, Kárgil, Lamayuru, and Snurla to Leh, in Ladák, where they arrived on the 27th August. After a halt of about a fortnight, the journey was continued over the Chang or Sakti pass to Lukong on the Pankong lake. Thus far the direction followed from Murree had been, on the whole, very nearly due east, but from the Pankong the route lay north or north-west to Káshghar. From Lukong, Dr. Stoliczka marched by Changchenmo, and the high plain of Lingzi Thung, to the head of the Yárkand river at Aktágh, and thence by the Suget Pass across the main Kuenlun axis to Shahidúla on the Kárákásh river, and again over the Sánju or Grim pass to Sánju on the edge of the plain of Eastern Turkestan. Continuing the journey, the Mission party arrived at Yárkand on the 8th November, and at Káshghar on the 4th December. From Káshghar, two excursions were made; one to the north by west, as far as the Chadyr lake, just inside the Russian frontier; the other to the north-east as far as the Belowti pass on the road to Ush Turfán. Dr. Stoliczka was then attached to the party under Colonel Gordon; and, leaving Káshghar on the 17th March 1874, proceeded south-west *viâ* Sarikol to the Pámir plateau, and as far as Panjah in Wakhán, where he arrived on the 18th April, and remained a fortnight, returning to Yárkand by the same route, with the exception of a detour on the Pámir. Yárkand was reached on the 21st May, and quitted again on the 28th, whence the Mission party proceeded to recross the Kuenlun by a more western route than before, over the Yangi Diwán, and then took the Kárákoram and Sháyok route to Leh. Dr. Stoliczka died at Murghi, two marches south of the Kárákoram pass, on the 19th June 1874.

Forsyth, are Messrs. Shaw and Hayward, who, independently of each other, penetrated to Káshghar in 1868; Dr. Scully, who accompanied Mr. Shaw to Káshghar, when the last named officer visited the country a second time in 1874; and Colonel Prejevalski, whose journeys, however, were entirely to the eastward of Káshghar and Yárkand. Excellent accounts have been published of most of the visits.[1] Occasional references to the fauna may be found in all of them, but the only travellers, except Dr. Stoliczka, who paid special attention to the zoology of the country, were Dr. Henderson, who was attached as medical officer to the first mission under Sir Douglas Forsyth, Dr. Scully, who accompanied Mr. Shaw in a similar capacity, and Colonel Prejevalski. The detailed zoological results of Colonel Prejevalski's journey to Lake Lob and the Altyn mountains in Eastern Turkestan, if published, have not yet reached India, but lists of the larger mammals noticed are given in the official report of his journey, which has been translated into German and English.[2] In these notices, however, the species are naturally not critically determined. Both Dr. Henderson and Dr. Scully paid especial attention to birds, although both brought away with them some very interesting mammals. Some of the rodents procured by Dr. Henderson were described by Dr. J. Anderson in the Proceedings of the Zoological Society of London,[3] and notices of some specimens obtained by Dr. Scully were given by Mr. Wood-Mason[4] and the present writer[5] in the Journal and Proceedings of the Asiatic Society of Bengal. The specimens thus described, and a few others not hitherto mentioned in print, will be noticed in the following pages. It is a singular fact, showing how much, in all probability, yet remains to be ascertained concerning the fauna of Ladák and Yárkand, that of the seven species of mammals[6] of which specimens were procured in those countries by Dr. Henderson, only three are represented in the collections made by Dr. Stoliczka.

Although Ladák has been visited and described by numerous travellers, there is not much more recorded concerning its fauna than is to be found in occasional notes. Very little indeed can be gleaned from Moorcroft.[7] Vigne[8] noticed a few of the mammals met with, and one of the wild sheep has been named after him. Thomson[9] devoted himself solely to botany, and scarcely referred to any of the animals observed; but Cunningham[10] gave a chapter to the wild animals of Ladák, amongst which he mentioned the kyang, wild yak, three kinds of wild sheep, markhor, ibex, Tibetan stag, musk deer, leopard, bear, wolf, fox, hare, lagomys, marmot, and weasel. Some of these animals cannot, however, be

[1] Visit to High Tartary, Yárkand and Kashghar, formerly Chinese Tartary, and return journey over the Karakoram Pass. By Robert Shaw: London, 1871.

Journey from Leh to Yárkand and Kashghar, and exploration of the sources of the Yárkand river. By G. W. Hayward; Jour. Roy. Geog. Soc., 1870, xl, p. 33.

Lahore to Yárkand. By George Henderson, M. D., and Allan O. Hume, C. B.: London, 1873.

A contribution to the Ornithology of Eastern Turkestan. By J. Scully, Surgeon, Bengal Army. Stray Feathers, iv, 1876, p. 41.

[2] Przewalsky's Reise an den Lob-nor und Altyn-Tag, 1876-77; Petermann's Mittheilungen, Ergänzungsheft No. 53, 1878.—From Kulja across the Tian-Shan to Lob-nor by Colonel N. Prejevalsky; translated by E. Delmar Morgan: London, 1879.

[3] On some Rodents from Yárkand, P. Z. S., 1871, p. 559.

[4] P. A. S. B., 1876, p. 80.

[5] J. A. S. B., 1876, xlv, Pt. 2, p. 49; 1877, xlvi, Pt. 2, p. 259.

[6] These species were *Erinaceus albulus*, *Mustela temon ?*, *M. erminea*, *Arctomys himalayanus*, *A. caudatus*, *Lepus pallipes* var., and *Lagomys ladacensis*. The first and the two last were obtained also by Dr. Stoliczka.

[7] Travels in the Himalayan Provinces of Hindustan and the Punjab, in Ladakh and Kashmir, &c., 1841, p. 311.

[8] Travels in Kashmir, Ladak, Iskardo, &c., 1842, ii, p. 277, &c.

[9] Western Himalaya and Tibet, 1852.

[10] Ladak, physical, statistical, and historical, with notices of the surrounding countries: London, 1854, p. 195.

said to inhabit Ladák; they are found in other parts of Tibet or in Kashmir, and the list even of the larger mammals is incomplete, as neither of the two kinds of antelope is included.

Dr. Leith Adams,[1] in his "Remarks on the Habits and Haunts of some of the Mammalia found in various parts of India and the West Himalayan Mountains," gives many details concerning the animals of Ladák. The scientific names, taken from the British Museum, are, however, often different from those used by naturalists at the present day. In his "Wanderings of a Naturalist in India,"[2] the same author describes his visit to Ladák, and notices the principal mammals observed during his journey, with many notes of interest concerning their distribution and habits. Heads of several of the larger mammalia of Ladák are well photographed in Kinloch's "Large Game Shooting in Thibet, &c."[3]

Kashmir proper, or the valley of the Upper Jhelum, is the only part of the country traversed by Dr. Stoliczka that is included in the area of which the fauna was described in Jerdon's "Mammals of India."[4] It is but very rarely that a reference to the mammals of Western Tibet is to be found in Mr Blyth's writings, although he procured many animals from the eastern part of that country.

The only writer, previous to Dr. Jerdon, who gave any general account of the Kashmir mammals was Dr. A. Wagner, who compiled a list mainly from the notes and collections of Freiherr von Hügel. This account was published as one of the appendices[5] to Von Hügel's "Kaschmir und das Reich der Siek."

In Dr. Falconer's "Palæontological Memoirs"[6] there are a few notes, written many years previously, on some of the animals of Kashmir and Ladák. Good descriptions of the stag, musk deer, ibex, marten, Tibetan hare, and marmot are given; but the names proposed had been preceded by others before the notes in question were published, and the only new term which has been adopted is that for the Kashmir stag, separately published by its proposer.

From the data already noticed, and some notes supplied by Mr. Shaw, Dr. Scully, Captain Trotter, Captain Biddulph, Dr. Cayley and others, the following lists are compiled.

1. **Kashmir.**—The area comprises the whole of the Upper Jhelum drainage, from the Pir Panjál range on the south to the Zánskár range, forming the watershed between Kashmir proper and Ladák (Drás, Zánskár, &c.) on the north. In the following list the animals observed by Von Hügel, Jerdon, and others are included.[7] The list of the larger animals is probably complete, or nearly so. An Indian or Tibetan form may occasionally stray across the mountains, but the species inhabiting the valley and the mountains around are for the most part well known. Of the smaller animals, however, much additional information is desirable. Considering how many English resort annually to Kashmir, it is surprising that our knowledge of the fauna is not more accurate.

CHIROPTERA.

Megaderma lyra.	*Vesperugo serotinus.*
Vespertilio longipes.	*V. pipistrellus.*

[1] P. Z. S., 1858, p. 512.
[2] Edinburgh, 1867.
[3] London, 1869, 2nd series, 1876.
[4] Roorkee, 1867.
[5] Vol. iv, pt. 2, 1844, pp. 567-581.
[6] London, 1868, Vol. i, pp. 576-586.
[7] I am indebted to Mr. Lydekker for assistance in drawing up this list.

INSECTIVORA.

Sorex (*Pachyura*) *sp.*

CARNIVORA.

Felis pardus.
F. (a small species, perhaps ***F.*** *bengalensis*).
Herpestes nipalensis.
H. griseus.
Canis aureus.
C. (*Cuon*) *rutilans?*
Canis (*Vulpes*) *montanus.*
Mustela subhemachelana.
Martes flavigula.
Lutra, sp.
Ursus isabellinus.
U. torquatus (*U. tibetanus*).

RODENTIA.

Pteromys inornatus.
Sciuropterus fimbriatus.
Nesokia barclayana.
Mus bactrianus (*M. theobaldi*).
Mus homourus.
Arvicola roylei.
Lagomys roylei.

UNGULATA.

Sus, sp.
Capra sibirica.
C. falconeri (*C. megaceros*).
Hemitragus jemlaicus.
Nemorhedus bubalinus.
N. goral.
Moschus moschiferus.
Cervus cashmirianus.

Arctomys caudatus is found on the Kashmir side of the Zánskár range, and *Lepus ruficaudatus* is said to have occurred north of the Pir Panjál, but neither can be fairly included in the Kashmir fauna. *Capra sibirica*, too, is confined to the ranges north of the valley.

The fauna, it will be seen, is Himalayan, with an admixture of palæarctic and of a few truly Indian species, such as *Herpestes griseus.*

II. Western Tibet, or Ladak.—This includes the valley of the Upper Indus east of Skardo, so far as the country belongs to Kashmir. It is an open question whether the fauna of Gilgit should be included in that of Western Tibet. There are several differences, and the occurrence of two species of *Cricetus*[1] in Gilgit shews a much closer connexion with the Central Asiatic fauna of Turkestan than is exhibited by the types of the Upper Indus valley. It appears, on the whole, best to omit the Gilgit forms, and with them to exclude *Capra falconeri*, an Afghan and Pir Panjál goat found in Gilgit and Skardo. With these omissions, the following is the list of mammals known to exist in Ladák[2]:—

CHIROPTERA.

Plecotus auritus.

INSECTIVORA.

Sorex (*Crocidura*) *myoides.*

CARNIVORA.

Felis uncia.
F. isabellina.
Canis laniger.
C. niger[3] (perhaps only a melanoid variety of the preceding).
Canis (*Cuon*) *alpinus.*
C. (*Vulpes*) *flavescens.*
Mustela erminea.
M., sp. (a small species of a brown colour).
Lutra, sp.

[1] Recently procured by Captain Biddulph.

[2] I am indebted to Dr. H. Cayley, who was for a long time British Resident in Ladák, for corrections in the following list, and for some additions to it. *Martes toufœa* should probably be added, see p. 30.

[3] P. Z. S., 1874, p. 654, pl. LXXVIII.

RODENTIA.

Arctomys caudatus.
A. himalayanus.
Mus sublimis.
Arvicola blythi.
Arvicola stoliczkanus.
Lepus tibetanus.
L. hypsibius.
Lagomys ladacensis.

Lagomys auritus.

UNGULATA.

Equus hemionus.
Bos grunniens.
Ovis hodgsoni, (*O. ammon,* auct., nec Linn.)
O. vignei.[1]
Ovis nahura.
Capra sibirica.
Pantholops hodgsoni.
Gazella picticaudata.

The isabelline bear, stag, and a few other animals, which inhabit Kashmir, occasionally cross the mountains into Ladák, and may be found in Drás and Zánskár, but they are not permanent inhabitants of the Tibetan region, and cannot be included in the fauna. The musk deer may be Tibetan, and Mr. Lydekker[2] is inclined to think it is so, as he has seen skins said to have been procured in Ladák, and the animal has a Tibetan name; but I have been unable to find that any one has actually seen the species wild in Tibet.

For comparison with the Western Tibetan fauna, the following list of the mammals, hitherto recorded as found in Eastern Tibet,[3] may be useful. I carefully exclude the numerous species mentioned by Hodgson, Blyth, and Père David, which are palpably forest forms, inhabiting comparatively low elevations (below 10,000 feet above the sea). These species come from the portions of Eastern Tibet which are south of the main Himalayan range, and which enjoy a damp climate.

CARNIVORA.

Felis uncia.
F. manul.
F. isabellina.
Canis laniger.
C. (*Cuon*) *alpinus.*
C. (*Vulpes*) *flavescens.*
Canis (*Vulpes*) *ferrilatus.*
Martes toufœa.
Mustela erminea.
M. temon.
Putorius larvatus, (*P. eversmanni, teste* Gray).
Ursus pruinosus.

RODENTIA.

Arctomys himalayanus, (*A. robustus*).
Sciurus europæus ?
Lepus pallipes.
Lepus oiostolus (perhaps the same as *L. pallipes*).
Lagomys curzoniæ.
L. tibetanus (perhaps the same as the last).

UNGULATA.

Equus hemionus.
Bos grunniens.
Ovis hodgsoni.
O. nahura.
Capra sibirica.
Pantholops hodgsoni.

Gazella picticaudata.

Perhaps *Budorcas taxicolor*, *Moschus moschiferus*, and *Cervus affinis* should be added, but I have grave doubts whether any of them are found on the Tibetan plateau.

[1] Another large sheep, *O. brookei*, described P. Z. S., 1874, p. 143, is founded on a skull supposed by its describer, Mr. E. Ward, to have been brought from Leh in Ladák; but no additional specimens have been obtained to confirm the locality.

[2] J. A. S. B., 1877, xlvi, Pt. 2, p. 288.

[3] My principal authorities for this list are Blyth's Catalogue of Mammals in the Museum, Asiatic Society; Jerdon's Mammals of India; the Catalogues of Hodgson's Mammals presented to the British Museum; and Père David's List of Eastern Tibetan and Chinese Mammalia in the Nouvelles Archives du Muséum, Vol. vii, Bulletin p. 91. For some remarks on these authorities and on the Tibetan mammalian fauna, see P. Z. S., 1876, p. 631.

III.—Kuenlun.—From the Kuenlun ranges, including all the mountainous region north of the Kárákoram pass and Upper Yárkand river, and intervening between the Mastágh range (usually marked on maps as the Kárákoram range) and the plains of Yárkand, I find only the following species recorded[1]:—

Mustela temon ?
Arctomys himalayanus.
Arvicola stoliczkanus.
Nesokia scullyi.
Lepus pallipes ? var.
Lagomys griseus.
Lagomys macrotis.
Equus hemionus.
Bos (*Poephagus*) *grunniens.*
Ovis nahura.
Capra sibirica.
Pantholops hodgsoni.

On the Altyn-tagh, a lofty range of mountains discovered by Colonel Prejevalski just south of Lob-nor, but believed to be continuous with the Kuenlun ranges, the following animals were observed by that traveller. (Petermann's Mitth. Erghft., No. 53, p. 17; From Kulja, &c., p. 84.) The names are those given by Colonel Prejevalski, except those between parentheses :—

Felis irbis (*F. uncia*), very rare.
Mustela intermedia (? *Martes leucolachnæa*), rare.
Canis lupus, *Canis chanko*?, *Canis vulpes* (? *V. flavescens*) } rather rare.
Lepus sp. (? *L. pallipes*), common in ravines.
Meriones sp. (? *Gerbillus cryptorhinus*,) rare, in the ravines.
Camelus bactrianus, ferus, roaming about, rarely inside the mountains.
Ovis polii, rare.
Pseudois nahoor (*Ovis nahura*) common.
Poëphagus grunniens, ferus, rare.
Asinus kiang (*Equus hemionus*), rare.
Sus scrofa, ferus, rare, in the ravines.

IV.—Eastern Turkestan.—The following is the list of animals known to be found in the plains of Yárkand and Káshghar :—

CHIROPTERA.

Vesperugo pipistrellus.
V. borealis.
Vesperugo discolor.
Synotus darjilingensis.

INSECTIVORA.

Erinaceus albulus.

CARNIVORA.

Felis tigris.
F. shawiana.
F. catus, var.
Canis lupus.
C. (*Vulpes*) *flavescens.*
Mustela stoliczkana.

RODENTIA.

Cricetus (*Cricetulus*) *fulvus.*
Mus pachycercus.
Mus erythronotus.
Gerbillus cryptorhinus.
Dipus lagopus.
Lepus yarkandensis.

UNGULATA.

Equus hemionus ?
Sus scrofa ?
Gazella subgutturosa, var. *yarkandensis.*
Cervus, sp. ?

[1] I include animals observed in the valley of the Kárákásh and that of the upper portion of the Yárkand river. My authorities are Shaw, Hayward, and Henderson, besides Dr. Stoliczka's notes and collections.

That this list is very imperfect is unquestionable, and it is probable that many species remain to be added. It is not likely that the skins purchased in the bazaars of Yárkand and Káshghar came from other countries; but as it is uncertain whether they were obtained in the plains or amongst the mountains, their names are not included in either list, unless other evidence of the habitat is forthcoming. The following species are thus represented by skins or horns purchased in the towns mentioned:—

Felis lynx.
Canis, sp., indet.
C. (*Vulpes*), sp., indet.
Martes leucolachnæa.
Meles, sp., nov.
Capreolus pygargus.

Wild camels are also found in the deserts east of Káshghar near Lob Nor. The occurrence of these animals was mentioned by Shaw (High Tartary, &c., p. 168), Hayward (J. R. G. S., 1870, xl, p. 134), Prejevalski (Petermann, Mitheilungen, 1874, p. 42), and others; and specimens have recently been obtained by the last-named traveller. The animal is said to be a small form of the two-humped or Bactrian camel, *Camelus bactrianus;* but there are doubts whether the animals found in the Turkestan desert are aboriginally wild, or merely the feral descendants of tame animals, abandoned or lost in the desert.

The following were the mammals observed by Colonel Prejevalski[1] around Lob-nor, and on the lower Tarim, the river formed by the junction of the Yárkand and other streams of Eastern Turkestan. The names in parentheses are those used in the present work:—

Tigris regalis (*Felis tigris*), common, locally abundant.
Felis manul, common.
Felis lynx, said to be rare.
Canis lupus, rare.
Canis vulpes (*? Vulpes flavescens*), rare.
Lutra vulgaris, said to be tolerably common in lakes abounding in fish.
Erinaceus auritus ? (*E. albulus*) rare.
Sorex sp., rare.
Lepus sp. (*? L. yarkandensis*), tolerably common.
Meriones sp. (*? Gerbillus cryptorhinus*), locally common.
Mus sp. (*? M. pachycercus*), not common.
Camelus bactrianus, ferus, to the east of Lob-nor, rare in the sandy deserts on the Lower Tarim.
Cervus maral (*? C. affinis*), common.
Antilope subgutturosa (*Gazella subgutturosa*), common.
Sus scrofa, ferus, common, locally abundant.

The fauna of Western Turkestan, now a province of the Russian Empire, has been described by Dr. N. A. Severtzoff in an elaborate paper published in Volume VIII of the "Transactions of the Imperial Society of Naturalists of Moscow," and also issued as a separate work under the title of "Verticalnoe e Gorozontalnoe Raspredalcnie Turkestanskie Jevotnie."[2] This work is unfortunately written in Russian, but a translation into English of all the portions relating to the mammalia has been published by Mr. Carl Craemers in the Annals and Magazine of Natural History for 1876.[3] To this work it will frequently be necessary to allude in the following pages. In all, 83 species are enumerated. Of these, 11 are domesticated, and the remaining 72 belong to the following orders:—

Chiroptera	7
Insectivora	3
Carnivora	21
Rodentia	27
Ungulata	14

[1] Petermann's Mittheilungen, Ergänzungsheft, No. 53, p. 9.—From Kulja across the Thian Shan, &c., p. 166.

[2] Moscow, 1873. When the present paper was first written, no translation of this work had appeared; and I am indebted to Dr. Feistmantel for very kindly translating some of the descriptions for me.

[3] Ser. 4, Vol. xviii, pp. 40, 168, 208, 325, 377. Some foot-notes by Mr. Alston are added.

Many details of the horizontal and vertical distribution are given, the whole area being divided into four districts,[1] and also into five vertical zones.

It is useless to copy out the list given by Severtzoff, because it is certain that many of the names require alteration. Thus Dobson has shown[2] that the seven bats, in all probability, represent but four species, and that several of the specific identifications are extremely doubtful. The nomenclature of the birds, which are much more easily determined than mammals, has been found to require alteration in many cases.

A list of the mammalia observed in China north of the Yang-tsi-kiang is furnished by Père Armand David in the "Nouvelles Archives du Muséum" for 1871, Vol. VII, Bulletin, p. 91. The country is considerably to the eastward of Turkestan, but there is a great similarity between the faunæ of the two regions. The identifications in Père David's list are by Mons. Alphonse Milne-Edwards, one of the best living authorities. The species believed to be new are figured by MM. H. and A. Milne-Edwards in their "Recherches pour servir à l'histoire naturelle des Mammifères." Apparently but few of the species of Northern China are the same as those of Eastern Turkestan.

V.—Ranges west and north of Yarkand and Kashghar.—The following mammals were observed or collected on the ranges west of Yárkand, including the Pámir plateau—

Felis uncia.
Ursus, sp.
Canis lupus.
Arctomys aureus.
Mus erythronotus.
Cricetus (*Cricetulus*) *phæus.*
C. (*Cricetulus*) *fulvus.*
Lepus pamirensis.
Ovis poli.
Capra sibirica.

whilst on the ranges north of Káshghar the following were observed:—

Lepus stoliczkanus.
Ovis karelini.
Capra sibirica.
Sus scrofa, var. *nigripes.*

The horns of *Cervus eustephanus* are said also to have been brought from the Thian Shan, and this animal is probably the *Cervus maral* of Severtzoff and Prejevalski.

In drawing up the present notes, I have received much aid from two officers of the Mission to Yárkand,—Captain Trotter and Captain Biddulph,—who assisted me by clearing up points left obscure in Dr. Stoliczka's diary, and who furnished me with notes on some of the animals observed by them. I am also indebted to Mr. R. B. Shaw and to Dr. Scully for both specimens and information. Dr. Günther did me the favour of comparing some of the skins with types in the Indian Museum. From Mr. Wood-Mason, who, in Dr. Anderson's absence, was in charge of the Indian Museum, I have received assistance of every kind, and also from Mr. Fraser, the Osteologist; and Dr. Anderson himself, since his return to India, has given me every facility for comparing and examining specimens. Without the aid kindly afforded me by the officers of the Museum, the present notes would be much more imperfect even than they are. Above all, I have to thank Colonel H. H. Godwin-Austen for the very great trouble he has taken in supervising the preparation of the plates in England—a long and tedious labour. The drawing and colouring of the plates has been delayed by a number of accidents, and, but for Colonel Godwin-Austen's assistance, the delay

[1] For details, see 'Ibis,' 1875, p. 97. The portion of Mr. Severtzoff's work relating to birds has been translated by Mr. H. E. Dresser in the 'Ibis' (*l. c.*), and many additional notes are added.

[2] Ann. Mag. Nat. Hist., Aug. 1876, Ser. 4, Vol. xviii, p. 130.

would have been far greater. During Colonel Godwin-Austen's absence from England in 1876-77, Mr. E. R. Alston very obligingly looked after the work.

This description of the mammalia collected by Dr. Stoliczka was originally written in 1875—nearly four years ago. The numerous additions since made to our knowledge of the mammalian fauna of Central Asia have rendered it necessary to rewrite a considerable proportion of the letter-press. The delay in publication has been caused by the time necessary for the preparation of plates.

Order CHIROPTERA.[1]

It could not be expected that many species of this order, of which fully two-thirds are limited to the tropical and sub-tropical parts of the earth, would be found in the cold and desert regions traversed by the expedition. Accordingly, the collection contains but six species; and of these one was obtained only in Kashmir. All belong to one family, the *Vespertilionidæ*, and all are well known European forms, or differ so slightly from their European allies, that they cannot be considered more than sub-species or varieties. The fur exhibits superficially the same pale colour in all the specimens which were obtained in dry sandy districts, a very constant character in bats inhabiting desert regions, as the writer has frequently pointed out.

Family—*VESPERTILIONIDÆ.*

1. Vesperugo pipistrellus.

Vespertilio pipistrellus, Schreb. Säugth. I, p. 167, Pl. 54, (177b).
Vesperugo pipistrellus, Dobson, Monograph of Asiatic Chiroptera, p. 95; and Cat. Chiropt. Brit. Mus., 1878, p. 223.

Yangihissar, between Káshghar and Yárkand: Kashmir.

The collection contains a large number of specimens of this species, which is so widely distributed in Northern Europe and Asia. Those taken in the Yárkand region have the terminal half of the fur covering the back very pale yellowish-brown, almost buff, and the extremities of the hairs of the under surface are so light-coloured as to appear almost white in alcohol; while the specimens obtained in Kashmir are very dark coloured throughout, the extremities of the hairs being of a slightly paler colour than the base. The Kashmir specimens resemble *V. abramus* in the comparatively shallow emargination of the upper third of the outer side of the ear-conch.

2. Vesperugo borealis.

Vespertilio borealis, Nillson, Illum. Fig. Scandin. Fauna, häft 19, pl. 36 (1838).
Vesperugo nilssoni, Keys. Blas. Wiegm. Archiv., 1839, p. 315.
Vesperugo borealis, Dobson, Mon. As. Chiropt., p. 105; Cat. Chiropt. B. M., p. 203.

Yangihissar and Kizil, Eastern Turkestan.

Although this species, the most northern of European and Asiatic bats, has not hitherto (so far as I can determine) been reported from any locality south of the Harz mountains in Europe and the Altai Range in Asia, I find in the collection three specimens of a bat which must be considered examples of it. They differ slightly in a few characters from specimens of *V. borealis* preserved in the museums, but not sufficiently so, in my opinion, to constitute a distinct species. In them the tragus reaches its greatest width slightly below the middle of the inner margin; the post-calcaneal lobe is very narrow; the edge of the

[1] All the identifications and notes on this order are by Mr. G. A. Dobson, M. A., M. B.

wing membrane between the fourth finger and the foot is faintly margined with white ; the outer upper incisor, on each side, is as long or slightly longer than the outer cusp of the inner incisor ; the lower incisors stand at right angles to the direction of the jaws ; the first lower premolar is about two-thirds the vertical height, but scarcely one-third the size of the second premolar. Fur pale yellowish-brown above, yellowish-white beneath; the basal half of the hairs dark-brown on both surfaces. The hair of the back extends upon the interfemoral membrane rather densely as far as the end of the fourth caudal vertebra ; a fringe of fine straight hairs extends round the upper lip in front, beneath the nostrils, and along the sides.

3. Vesperugo discolor.

Vespertilio discolor, Natterer, Kuhl. Deutsch. Flederm. Wetter. Ann. iv (1819).
Vesperugo discolor, Keys. Blas. Wiegm. Archiv., 1839, p. 312.—Dobson, Mon. As. Chir., p. 106 ; Cat. Chir. B. M., p. 204.

One specimen taken at Kizil.

This agrees in all its principal characters with European specimens of the species, differing slightly in the form of the tragus, which is less broad above, reaching its greatest width about the middle of its outer margin. Post-calcaneal lobe distinct, rounded as in *V. pipistrellus.* Outer upper incisor, on each side, small, not equal to half the vertical extent of the inner incisor ; first lower premolar short and blunt, not half the vertical extent of the second premolar ; lower incisors not crowded, placed in the direction of the jaws.

Fur similar in colour to that of *V. borealis,* extending less densely upon the interfemoral membrane, and not forming a fringe along the upper lip in front beneath the nostrils. This absence of a thin fringe of hairs along the upper lip below the nostrils affords an easy method of distinguishing badly preserved skins of immature specimens of this species from *V. borealis.* This has not been previously noticed.

4. Vesperugo serotinus.

Vespertilio serotinus, Schreber, Säugth. i, p. 167, pl. 53 (1775).
Vesperus serotinus, Keys. Blas. Wiegm. Archiv., 1839, p. 312.
Vesperugo serotinus, Dobson, Mon. As. Chir., p. 108 ; Cat. Chir. B. M., p. 191.

Kashmir.

This species is so widely distributed, and varies so much in the colour of the fur, that it has received not less than seven different names. The specimens obtained by Dr. Stoliczka in Kashmir differ from European forms in the colour of the fur only, which is pale-brown above and almost white beneath, the basal half of the hairs on both surfaces being dark.

5. Synotus darjilingensis.

Plecotus darjilingensis, Hodgson, Horsfield, Ann. and Mag. Nat. Hist., 1855, xvi, p. 103.
Synotus darjilingensis, Dobson, Mon. As. Chir., p. 86 ; Cat. Chir. B. M., p. 177.

Yangihissar.

The single specimen in the collection agrees in the form of the ear with specimens examined by me from Darjiling, the Khási Hills, Masuri, Simla, and other Himalayan local-

ities. There is no trace of the small lobe which is found in the closely allied European species *S. barbastellus* (*Vespertilio barbastellus*, Schreber), projecting from the centre of the outer margin of the ear-conch. Nevertheless, so closely does this Himalayan and Central Asiatic form agree in all other respects with the European, that I must consider the former a sub-species only.

6. Plecotus auritus.

Plecotus auritus, L. Syst. Nat., ed. XII, vol. i, p. 47.—Dobson, Mon. As. Chir., p. 84.; Cat. Chir. B. M., p. 178.

Leh, in Ladák.

The specimens obtained at Leh do not differ in any respect from *P. auritus* of Europe, except in the slightly paler colour of the extremities of the hairs and membranes.

The following species, though not represented in the collection, will most probably be hereafter found in the regions lying between Kashmir and Yárkand :—

Rhinolophus ferrumequinum, Schreber.—This has been found in Kashmir, at Masuri, and in Nipal, and extends through Northern Asia, westwardly, to Europe as far as England, and, eastwardly, to Japan.

Rhinolophus hipposideros, Bechstein.—Extends from Asia Minor to Ireland.

Vespertilio murinus, Schreber.—Generally distributed throughout Europe, North Africa, and the temperate regions of Asia, extending from the North-West Himalayas to England.

Vespertilio longipes, Dobson.—Kashmir (caves of Bhima Devi, 6,000 feet).

Vespertilio mystacinus, *Leisler*.—North-West Himalayas, probably distributed throughout the whole range, and thence, westwardly, to Ireland.

Harpiocephalus auratus, Milne-Edwards.—Eastern Tibet.[1]

Harpiocephalus leucogaster, Milne-Edwards.—Eastern Tibet, North-Western Himalayas.

Vesperugo noctula, Schreber.—Generally distributed throughout the Himalayas, Asia, Europe, and Africa, in the tropical parts of these continents, apparently inhabiting mountainous regions only.

Vesperugo leisleri, Kuhl.—From the Himalayas, through Central Asia, to Europe.

Vesperugo maurus, Blasius.—Inhabits the mountainous regions of Asia and Europe, from Java through the Himalayas to the Alps, extending to the Canary Isles westwardly, and eastwardly to the east coast of China.

[1] The two species of *Harpiocephalus* are from Moupin in the forest region of Eastern Tibet, and consequently from a part of the Oriental and not of the Palæarctic region. As already explained in the introductory remarks, Père David's Moupin collections were chiefly obtained from a country which, altho ugh usually classed as part of Tibet, has a totally different fauna from that of the Tibetan plateau.—W. T. B.

Order INSECTIVORA.

Family—*ERINACEIDÆ.*

7. Erinaceus albulus. Pl. I, fig. 2, and Pl. Ia, fig. 1.

Erinaceus albiventris, Wagner, *apud* Henderson, Lahore to Yárkand, p. 113, *nec* Wagner.
Erinaceus (*Hemiechinus*) *albulus*, Stoliczka, Journal of the Asiatic Society of Bengal, 1872, xli, Pt. 2, p. 226.
? E. auritus, Prejevalski, Pet. Mitt. Erg. Hgt. No. 53, p. 9.
Kirpa, Turki of Yárkand.

1 (skin) Kárghalik, south of Yárkand; 2, 3, 4 (skins); 5 (skeleton) Yárkand; 6, 7 (skins)Yangihissar; 8 (skin) Jigda, north of Káshghar.

The type of this species was obtained by Dr. Henderson when accompanying the first Yárkand Expedition, and presented to the Indian Museum, Calcutta. This specimen was obtained a little north of Sánju. The following is Dr. Stoliczka's original description of the species (*l. c.*) :—

"Snout very long and pointed, ears moderate, ovate at tip; spines irregularly placed, much as in *pictus*,[1] but comparatively longer and thicker; each of them is dusky at the base, then up to half its length purely white, followed by a blackish-brown ring, its breadth being only about one-fifth of the total length, tip largely white and rather abruptly pointed, the result being a prevalence of white colour on the upper surface of the body. There is no perceptible nude space between the ears, and the spines begin immediately on the hind neck, and the largest on the back are fully one inch long. Each spine is surrounded by 24 to 26 fine longitudinal furrows, separated by minutely tuberculated ridges, scarcely wider than the furrows. The tail is almost as short as in *pictus*.

"Head entirely rufescent above and at the sides, except the upper mandible towards the angle of the mouth, this being white; base of ears also white, as well as the entire underside, which is thickly set with long hairs passing into a slight rufescent shade on the sides of the belly. Ears, lower portions of front and hind feet, and tail dusky-brownish, being thickly intermixed with short white hairs; moustache brown, whitish towards the tip. Claws strong, five on each foot, very pale-brownish.

"The only specimen measures very nearly seven inches; the ear slightly exceeds one inch; distance from tip of snout to the angle of the mouth not quite one; to the ear slightly more than one and a half inches. Dr. Henderson gives the locality 'Langur near Sánju, Yárkand,' and the native name '*keepa*.'[2]

"The only known form to which the present species is closely allied is *E. lybicus*, Ehrenb., which has similarly grooved and similarly coloured spines, but they are decidedly shorter, and the colouration of the other parts of the body is different."

[1] *E. pictus* is a species described from Cutch by Dr. Stoliczka. It is very closely allied to *E. micropus*, of which it may not be more than a variety, but it appears always to possess a malar bone, which is wanting in the skull of *E. micropus*. Anderson, J. A. S. B., 1878, xlvii, Pt. 2, p. 201.

[2] This is a misreading or misprint: the name is '*kirpa*.'

On the label of one of the specimens from Kárghalik, a male, the following details, evidently from the fresh specimen, are given in Dr. Stoliczka's handwriting :—

	Inches.
" Whole length	8·2
Length of head	2·3
Do. of tail	0·7
Snout to eye	1·17
Do. to base of ear	1·75
Length of ear from front base	1·5
Ditto from hind do.	1·45
Breadth of ear	1·2
Length of gape	1·2
Do. of fore foot with claws	1·25
Do. of hind foot	1·6

" The snout projects 0·4 inch beyond the lower jaw; the distance between the fore feet when expanded is 8·2 inches; between the hind feet 9 inches. Iris black, snout blackish, outer edges of nostrils ciliated, head pale rusty, entire under surface white, as well as behind the ears, along [the edge of the area covered by] the spines all round the white is fringed with very pale rusty; ears, feet, and tail silvery brownish-grey; claws fleshy white, soles blackish. Tongue elongately oval, and very thick."

The longest spines are a little less than an inch in length in most specimens. The irregularity of the spines, I think, depends on the manner in which the skin has dried.

There is no variation of importance in the different specimens.

The skeleton is that of an animal not quite adult. The skull measures 1·9 inches long by 1·1 broad across the zygomatic arches, and 0·5 between the orbits.

The following are measurements of an old skull with worn teeth taken from one of Dr. Stoliczka's speeimens :—

	Met.	Inches.
Length from occipital plane to anterior end of premaxillaries	·050	2
from lower margin of foramen magnum to ditto	·048	1·93
„ of bony palate from opening of posterior nares	·028	1·15
„ of suture between nasal bones	·015	0·6
Breadth across zygomatic arches	·030	1·23
„ of brain pan at posterior termination of zygomata	·023	0·94
Least breadth of frontal region between orbits	·012	0·51
Breadth of nasals	·002	0·1
Length of first true molar	·005	0·18
Breadth of ditto	·006	0·22
Length of lower jaw from angle	·037	1·48
Approximate height of ditto	·017	0·7

On Plate I*a*, the figures 1, 1*a*, 1*b*, are taken from a very old skull; 1*c*, 1*d*, 1*e*, 1*f*, from the young, immature skull belonging to the skeleton obtained at Yárkand, the latter being added in order to show the form of the teeth, which are worn down to a flat surface in the aged skull represented in the upper figures.

Erinaceus albulus is a very near ally of *E. auritus*, the species inhabiting Eastern Europe and Northern Asia; indeed so close is it, that, as Dr. Anderson has pointed out to me, there is no external character by which dried specimens, at all events, can be distinguished. All the teeth of *E. auritus* are, however, very much smaller, and although the general outline of the skull is similar, that of *E. albulus* is larger; the occipital portion is differently shaped, and there are several minor differences. The only specimen of *E. auritus* for comparison in the Indian Museum is from the Volga, and it is far from improbable that other specimens from further east may show a passage into *E. albulus*.

Family—*SORICIDÆ*.

S. Sorex (*Crocidura*) Myoides. Pl. I, fig. 1, and Pl. Ia, fig. 2.

W. Blanf., J. A. S. B., 1875, xliv, Pt. 2, p. 106.

S. (Crocidura) *parvus, murinus, subtus albescens, pedibus albidis, pilis brevibus, sparsis indutus, caudâ supra fuscâ, subtus albescente, setis brevissimis confertim annulatâ, pilis longiusculis hic inde instructâ, auriculis mediocribus, rostro subtus albido. Long. corporis cum capite 2·1, caudæ 1·5, pedis posterioris cum tarso 0·5, auris 0·22 poll. angl.*

1 ♀, in spirit, from Leh, in Ladák.

Mouse-brown above, white below, the fur being slaty at the base throughout; muzzle with numerous whiskers(*vibrissæ*), the uppermost of which are brown, the lower white; the longest about three-quarters of an inch; lower surface of muzzle and chin white, with a few long hairs. Ears moderate, rounded, about as broad as they are high, almost naked. No lateral glands. Fore-feet whitish, thinly clad, with white hairs above. External surface of thigh and tarsus brown, inner surface whitish; lower part of thigh and tarsus very thinly clad; soles of feet naked, light brown. Tail about two-thirds the length of the head and body, moderately thick, with very close rings of short hairs, and a few scattered longer hairs.

The following dimensions, especially those of the ear, being from a specimen preserved in spirit, are somewhat less than they would be in a living animal :—

	Inches.
Whole length from nose to end of tail	3·6
Tail from anus	1·5
Height of ear from orifice	0·23
Breadth of ear-conch	0·22
Longest whisker	0·73
Length of fore foot (palma)	0·35
Do. of hind foot (planta)	0·5

Teeth 28 —$i\ \frac{2+4}{2}$, $c\ \frac{1-1}{1-1}$, $m\ \frac{4-4}{4-4}$. The posterior process of each upper central incisor is about the same size as the canine. The second incisor from the middle is about three times the

height of the third, and its length is equal to that of the outer incisor and canine together. The outer incisor is very small; less than the canine.[1] All the teeth are white.

	Met.	Inch.
Length of skull	·017	0·74
Do. of bony palate in front of posterior nares . . .	·008	0·32
Breadth of skull where broadest near occiput . . .	·008	0·34
Length of mandible (incisors not included) . . .	·009	0·38

The above description is taken from the only specimen in the collection, a female. It was obtained at Leh on the 9th September, and appears fairly adult, though the basi-occipital suture has not disappeared. All the teeth are fully grown. The species appears nearly allied to *S. guldenstaedtii* of Pallas,[2] but that is differently coloured (dusky ash), larger, and is said to have very small ears. Another closely affined form is *S. fumigatus* of De Fililppi[3] from Northern Persia, but that is dark lead colour above, ashy beneath. The tail is proportionately much shorter in *S. myoides* than in any Himalayan species with which I am acquainted belonging to true *Crocidura*, or than in the Tenasserim *S. fuliginosus*.[4]

A species of shrew was observed near Lake Lob by Prejevalski, but it has not yet been described.

Order CARNIVORA.

Family—*FELIDÆ*.

9. Felis catus.

Linn., Syst. Nat., Ed. xii, 1766, i. p. 62.

Yawa mashak, Turki of Yárkand (Scully).

A skin of a wild cat, without the skull, brought by Dr. Scully from Eastern Turkestan, agrees very well with that of the common wild cat of Europe, except that the tail tapers instead of being cylindrical, and that the dark marks are rather indistinct. The bars on the tail and legs correspond with those of *F. catus*.

10. Felis shawiana. Pls. Ib. Ic.

W. Blanf., J. A. S. B., 1876, xlv, Pt. 2, p. 49.

F. sp. near *F. pardinus* (*? Chaus caudatus*, Gray.) W. Blanf., J. A. S. B., 1875, xliv, Pt. 2, p. 106.

Molun, Turki of Yárkand.

Felis F. domesticam *magnitudine superans, ad* F. chaus *proxime accedens; griseo-fulva, nigro-maculata, subtus alba atque maculis nigris majoribus ornata; caudâ breviusculâ, supra, apicem versus, nec infra, nigro-transfasciatâ, cranio elongato, ei* F. viverrinæ *simili, vellere molli, basin versus pallide purpurascenti-griseo: longitudine* (sc. *pellis*) *sine caudâ bipedali, caudæ 7—8 unc., cranii 4·25.*

1, Skin without skull or feet, purchased in Yárkand.

Amongst the collections made by Dr. Stoliczka in Eastern Turkestan, was an imperfect skin of a cat. Although I thought it probable that it belonged to an undescribed form, there was a bare possibility that it might be a specimen of a species inhabiting Western

[1] The names of the teeth are in accordance with the determinations by Brandt, Zool. Record, 1866, p. 26, and Bull. Soc. Hist. Nat. Mosc., xli, pp. 76-95.

[2] Zoog. Ros. As., i, p. 132, pl. IX, fig. 1.

[3] Arch. p. la Zool. Genova, ii, p. 379; Note di un Viaggio in Persia, p. 343.

[4] Blyth, J. A. S. B., xxiv, p. 362.

Turkestan and described by Dr. J. E. Gray[1] in 1873 as *Chaus caudatus*. The tail was certainly much shorter than was represented in Dr. Gray's figure, but this might have been due in part at least to a portion having been lost. Accordingly, in the published list of the collections, I noted the species as *Felis* sp. near *F. pardina* (? *Chaus caudatus*, Gray.)

Subsequently, in 1876, two additional skins of the same cat were brought from Yárkand, one by Mr. Shaw and the other by Dr. Scully. Neither is perfect, but Mr. Shaw's specimen only wants the paws, and the whole skeleton has been preserved with the skin. It was evident that the species was quite distinct from *Chaus caudatus*, the tail being considerably shorter, and the skull of quite a different form. I consequently described this apparently new form, and named it after Mr. R. B. Shaw, to whom we are so much indebted for our present knowledge of Eastern Turkestan.

Description.—General colour pale greyish fulvous above, the back rather darker than the sides, underparts white; the body marked throughout with rather small black spots, which are largest on the abdomen, smaller and closer together on the shoulders and thighs, tending to form cross lines on the latter, and indistinct on the middle of the back; anterior portion of the face and muzzle whitish, cheek stripes of rusty red and black hairs mixed. Ears rather more rufous outside, especially towards the tip, which is blackish-brown and pointed, the hairs at the end scarcely lengthened; interior of ears white. There are some faint rufous spots at the side of the neck. Breast very faintly rufous with one narrow brownish band across. Inner side of limbs mostly white, a black band inside the forearm, and a very black spot behind the tarsus. Apparently there are two black bands inside the thigh, but the limbs are ill-preserved in all the specimens. Tail dusky above near the base, with 5 or 6 black bars above on the posterior half, none below, the dark bars closer together towards the tip. Fur soft, moderately long, purplish-grey towards the base.

The size appears rather to exceed that of a domestic cat, and to equal that of *F. chaus*. The tail apparently is about half the length of the body without the head. In the two best skins examined, the length from nose to rump is about 25 inches, the tail 7 to 8, but very little dependence can be placed on such measurements. The tail-vertebræ from the posterior end of the sacrum measure when put together 8·75 inches, which would coincide with a tail measurement outside the body of about $7\frac{1}{2}$ inches.

The skeleton is that of an adult animal, and the following are dimensions of the skull and limb bones:

	Metre.	Inches.
Total length of skull	·108	4·25
Length from incisors to lower edge of foramen magnum	·093	3·67
Breadth across hinder parts of zygomatic arches	·073	2·87
„ behind postorbital processes	·031	1·23
Least breadth of face between orbits	·020	0·8
Length of suture between nasal bones	·025	1·
Greatest diameter of bony orbit	·032	1·25
Length of bony palate behind incisors	·041	1·63
Length of mandible	·073	2·88
Height of do. from the angle to the top of the corronoid process	·033	1·3
Length of femur	·140	5·52
„ of tibia	·141	5·57
„ of humerus	·126	4·95
„ of radius	·133	5·26

[1] P. Z. S. 1874, p. 31, Pl. VI, VII.

Compared with the skull of *Felis chaus*, that of *F. shawiana* is comparatively longer, it has the nasal portion more elongate, the face less convex, the breadth behind the postorbital processes less, whilst the processes themselves are longer and project further. The true lynxes have an even shorter and more convex skull, and so have the smaller typical cats. The skull of *Chaus caudatus* approximates to that of the true cats, being rounder and shorter than that of *F. chaus*. The only skull I can find which approaches in form to that of *Felis shawiana* belongs to *F. viverrina*, the type of Gray's genus *Viverriceps*, a cat with a peculiarly long head.

Felis shawiana is distinguished externally from *F.* (*Chaus*) *caudata* by its much shorter tail, from *F. chaus* by being spotted throughout, and from *F. torquata* (*F. ornata*, Gray) by its shorter tail, more rufous colouration, and distinct black spots on the abdomen. It is very different from *F. euptilura*,[1] which has red spots on the sides and rufous bars across the breast.

This cat appears to be common in the plains of Eastern Turkestan, around Káshghar and Yárkand. Dr. Stoliczka has noted on the label of the original skin that the animal is found abundantly, and I have received the same account from Captain Biddulph, Dr. Scully and Mr. Shaw.

In the figure on plate 1b, the black spots on the belly have been omitted. Three views of the skull are given on plate 1c.

11. Felis uncia.

Schreb., Säugth., i, p. 386, Pl. C.

1, Adult skin (probably purchased) sent from Leh; 2, Skin of young animal without label; 3, skull of young animal purchased at Káshghar, and said to have been brought from Sarikol (the two last very possibly belonged to the same individual).

The occurrence of the ounce, or snow leopard, as it is called by sportsmen, on the Pámir, might have been anticipated. It is found in parts of Southern Siberia,[2] throughout Tibet, on the Altyn-tagh, south of Lob-nor, and in Western Turkestan. To the east it extends to the Amur, where Schrenk found it abundantly, and it occurs to the westward on the mountains of Persia, Armenia and Asia Minor, being found in the latter country near Smyrna.[3]

12. Felis lynx.

Linn., Syst. Nat., i, p. 62.
Salesan, Turki of Yárkand (Scully).

1, 2, Skins (without skulls or feet) purchased at Káshghar.

Two fine skins, removed, without cutting open the belly, by an incision from the insertion of the tail to between the thighs, are marked as purchased for Government by Captain Chapman in Káshghar; one is said to have been brought by an Aksu merchant. Both belong to the European form of lynx, and not to the much paler *F. isabellina*[4] of Tibet.

[1] Ellliot, P. Z. S. 1871, p. 761, Pl. LXXVI.
[2] Pallas, Zoog. Ros. As., i, p. 17; Middendorf, Sib Reis., ii, 2, p. 75.
[3] Danford and Alston, P. Z. S. 1877, p. 272.
[4] J. A. S. B. xvi, 1847, p. 1178.

The only difference I can see from a fine Norwegian skin in the Indian Museum is that the Káshghar specimens are rather more rufous.

The colour of the upper parts generally is pale-brown with a slight lilac tinge, darkest on the back, but with no distinct central stripe; the under-fur is light orange brown, the extreme tips of the longer hairs are sometimes black, sometimes white, thus producing a slight silvery appearance.

The tail is 7 or 8 inches long (probably somewhat stretched), about 3 inches at the end being black. The ears are tipped with black, and have black tufts at the extremity, an inch to an inch-and-a-half long; abdomen white with a few small black spots. The indications of spots on the sides and limbs are very faint indeed.

Family *CANIDÆ*.

13. Canis lupus.

Linn., Syst. Nat., i, p. 58.

1, 2, Flat skins purchased at Káshghar; 3, 4, flat skins without label.

The four skins in the collection may be referred apparently rather to *C. lupus* than to *C. laniger*: according to Mr. Blyth,[1] the Tibetan wolf, *Lupus laniger*[2] of Hodgson, is distinguished by its paler colour, owing to the absence of black-tipped hairs on the sides, and the distinct black streak on the forelimbs of the European wolf is but slightly indicated in the Tibetan animal. The fulvous of the European wolf is replaced by a delicate light isabelline, or rufous cream-colour. Mr. Blyth also points out that *C. laniger* is a slighter animal with smaller paws, and he mentions some cranial differences, but, on the whole, he appears doubtful whether the Tibetan wolf is worthy of specific distinction.

On the whole, however, naturalists appear fairly agreed that the two races must be distinguished. There is one peculiarity at least in which the Tibetan wolf agrees better with the Indian species, *C. pallipes*, than with *C. lupus*; this is the proportion of the 'carnassial tooth' in the upper jaw to the true or tubercular molars. In the European wolf the length of the carnassial tooth exceeds that of the two molars together; the reverse is the case in the Indian wolf. On examining the skulls of Tibetan wolves in the Indian Museum[3] I found that they agreed in this particular with those of *C. pallipes*, and differed from *C. lupus*. The importance of the distinction has been pointed out in a pamphlet by Professor Jeitteles of Vienna, who has shown that none of the larger domestic dogs can be descended from the European wolf because of the relative proportions of their teeth, but that all must have been derived from the Indian wolf, or from allied forms. Professor Jeitteles' remarks induced me to examine the Tibetan wolves' skulls.

In the absence of the skull, it is, of course, impossible to say with certainty that the wolf of Eastern Turkestan is the same as *Canis lupus*, but it is probable that the two are identical.

[1] J. A. S. B., 1847, xvi, p. 1176.

[2] Hodgson, Calc. Jour. Nat. Hist., 1847, vii, p. 474, *Canis chanco*, Gray, P. Z. S., 1863, p. 94. Although in the same year, 1863, a specimen of *C. laniger* with a skull was presented by Mr. Hodgson to the British Museum, it appears doubtful whether this specimen was compared by Dr. Gray with his *C. chanco*, for in the catalogue of carnivorous, &c. mammalia, published in 1869, Hodgson's species is simply placed with a query under *Lupus chanco*. Hodgson distinctly stated that his *L. laniger* was the Tibetan *chanco*, but his specimen was from the country north of Sikkim; Gray's from Western Tibet (Chinese Tartary).

[3] P. A. S. B., 1877, p. 116.

The skins purchased at Káshghar are rather large; the hair is long and appears to me rather softer than in most wolf-skins; between the shoulders it is nearly 5 inches in length. The under-fur is ashy-grey and woolly. Black tips to the hair abound on the forehead, back, upper part of tail, thighs and shoulders, being thickest along the middle of the back. Ears outside brown with black hairs mixed: inside there are white hairs with black mixed near the margins. The black line down the fore-leg is distinct. Two skins are more fulvous, the others more grey; one of the latter is smaller than the rest, and has more black on the back and tail, whilst the muzzle, which is rufous in the other skins, is in this case blackish. I think this may be the skin of a younger animal.

Hayward[1] states that two kinds of wolves are found in Eastern Turkestan. One is probably the present species; the second may be either the animal noticed below, or *Canis* (*Cuon*) *alpinus* of Pallas, which is said by Severtzoff to be met with in Western Turkestan, but not at lower elevations than 5,000 feet.

14. Canis sp.

1. Skin without skull purchased at Káshghar.

This skin belongs to a small species, rather larger than the common jackal. The general colour is very like that of a wolf, and the fur about equally coarse and rather long. The prevailing tint is black, mixed with pale rufous and white, along the back and upper surface of the tail; pale rufous on the flanks, limbs, anterior portion of the abdomen and under the tail. There is a distinct black line down the front of each foreleg. The upper part of the head is rufous, mixed with whitish and black, the forehead being greyer owing to the predominance of white tips to the hairs, which are chocolate-brown at the base. Whiskers black; upper lip, chin and throat white. Hairs on the outside of the ears short, brown, with short black tips, inside longer and white. On the back of the neck the hairs are three to four inches long, ashy at the base, then darker, the terminal portion for about an inch rufous-white, the extreme tips black. On the middle of the back the hair is more than four inches long, at the base brownish-ashy mixed with white; the white extends only about an inch, then, for about 1½ inches, the hairs are chocolate-brown, the terminal portions rufescent and black, the black tips much longer than on the neck. On the tail the extreme basal portion of the hair is ashy, the remainder rufescent, except the tip, which is black. Sides the same but without black tips, the blackish area on the back bounded by a fairly defined line on the sides. The tip of the tail is quite black, owing to all the hairs having long black tips. The under-parts are greyish-white, slightly mixed with rufous on the breast and anterior portion of the abdomen, and with black tips to many of the hairs on the breast, the under-fur being ashy throughout.

The tail is short as in the jackal, but more bushy. Ears moderate, much shorter in proportion than in foxes or wolves. Feet larger than in *C. aureus*.

I cannot identify this with any known canine animal. It is too large, as already remarked, for a jackal, and has much longer, fuller fur. It is too small for *C. alpinus* of Pallas, which, moreover, is a far more rufous animal with a proportionally longer tail,[2] and is said

[1] Jour. Roy. Geog. Soc., 1870, xi, p. 134.

[2] Compare Schrenck, Reis. Amur., vol. i, p. 48.

by Gray[1] to have the dentition of *Cuon*. The description of *Canis* (or *Vulpes*) *melanotus* would agree fairly, but that the ears are black in that animal, which is evidently a fox with a long bushy tail, and apparently, from the description, a much smaller animal than the present. I know of no other Central Asiatic form with which to compare this skin. It differs in colour and texture of fur from the equally unknown *saggurg*[3] of Persia. I can only conclude that the skin described belongs to a large kind of jackal, hitherto undescribed; but I am unwilling to give a name to a mere skin without a skull in so difficult a genus as restricted *Canis*, and it is barely possible that the skin may be that of a young wolf. The colouration is not unlike that of the African *C. mesomelas*, but much paler and greyer.

It was very probably a skin of the same animal, also from Chinese Tartary, which was referred with doubt by Mr. Blyth[4] to *Canis melanotus*. This skin has disappeared, having probably decayed.

15. Canis (*Vulpes*) flavescens. Pl. II, (as *Canis* (*Vulpes*) *montanus*).

Vulpes flavescens, Gray, Ann. Mag. Nat. Hist., Ser. 1, xi, p. 118, (1843): List Mam. B. M., p. 60 (1843): Cat. Hodgson's coll. B. M., p. II. (1846): Do. second edition, p. 6 (1863): P. Z. S., 1868, p. 516: Cat. Carn. &c. Mam. B. M., p. 203 (1869).—Adams, P. Z. S., 1858, p. 516.—Blyth, Cat. Mam. As. Soc., p. 42.

Tulké, Turki of Yárkand.

1, 2, skins (no skulls or feet) purchased at Leh; 3, skin (and a skull detached) Marálbáshi; 4—8, skins (without skulls or feet) purchased in Káshghar; 9, skin (with skull and feet) Káshghar, from an animal presented alive to the Mission; 10, head and skull, no label.

After much study of the skins available, and with much doubt, I have determined to follow Mr. Blyth, and to class the foxes of Ladák and Yárkand apart from the common *Vulpes montana* of the Himalayas. That the two are closely allied is certain, and it is extremely doubtful whether any definite characters can be found to distinguish them, but so far as the specimens available for examination show, the northern race is larger, paler in colour, and often more rufous, with longer hair (a difference due, doubtless, to climate), and with much larger teeth. Still there is so much variation in all these characters, that I was long inclined to class all together as varieties of one species, and I am still far from satisfied that any constant distinction exists. Under the impression that the two were not separable, the plate representing the Yárkand foxes was named *Canis* (*Vulpes*) *montanus*. I think, however, that the differences between several recognized races of foxes are no greater than those between *V. montana* and the Tibetan animal, and I therefore leave the two forms separate for the present.

The Tibetan specimen in the Indian Museum, referred by Mr. Blyth in his Catalogue of the Mammalia in the Museum of the Asiatic Society to *V. flavescens*, appears to me identical with some of the skins from Káshghar. There is still a possibility that Mr. Blyth's *V. flavescens* may not be the same as Gray's original type of the species in the British Museum; this was a purchased specimen, said to have been brought from Persia. Subsequently, in his Catalogue of the Carnivorous, Pachydermatous and Edentate Mammalia,

[1] P. Z. S., 1868, p. 498: Cat. Carn. &c., Mam., p. 184.
[2] Pallas, Zoog. Ros. As., i, p. 44.
[3] Eastern Persia, ii, p. 38.
[4] Cat. Mam. Mus. As. Soc., p. 39.

published in 1869, Dr. Gray gave the Punjab Salt Range as the locality, on the authority of a specimen presented by Dr. Oldham. If this be right, the true *V. flavescens* may be the same as *V. pusillus*[1] formerly identified[2] by its describer, Mr. Blyth, with *V. flavescens*, but subsequently considered distinct. Dr. Leith Adams, however, identified a fox, of which he purchased specimens at Leh, with *V. flavescens*, and as his skins were compared at the British Museum, his identification is in all probability correct, whilst there can be but little question that all the fox skins usually brought for sale at Leh belong to the same species as those obtained by Dr. Stoliczka. The identification is, I admit, by no means perfect.

The most prominent distinction between the foxes of Eastern Turkestan and the true *V. montana* of the Himalaya appears to be in the size of the teeth. As a rule, the skulls of the former are larger, but one skull of *V. montana* in the Indian Museum scarcely differs in measurement from that of the Marálbáshi specimen of *V. flavescens*. The former is 5·6 inches long from the occipital plane to the end of the premaxillaries, by 2·95 broad across the zygomatic arches, and the lower jaw measures 4·35 from angle to symphysis. The following are the dimensions, in parts of an inch, of the three hindmost teeth of the upper jaw in the two skulls :—

	V. flavescens.		*V. montana.*	
	Length,	Breadth,	Length.	Breadth.
p. m. 1	0·62	0·32	0·53	0·27
m. 1	0·43	0·55	0·37	0·45
m. 2	0·25	0·4	0·22	0·31

There is some variation, but the difference is considerable in all the skulls I have examined.

All these Asiatic foxes, although differing considerably in colour, are near allies of the common European fox. Comparing the Marálbáshi skull with that of *V. vulgaris*, I notice considerable difference in the teeth. In *V. vulgaris* the last molar is much shorter transversely in proportion to its length from front to back of the jaw; the hinder margin is nearly a straight line, whilst in the Yárkand skull it is concave. The penultimate molar in the latter, too, is broader than it is in any of the European skulls I have examined. There is, however, sufficient variation amongst the teeth of these skulls to render it doubtful how far specific characters can be made to depend upon them alone.

The auditory bullæ of the Yárkand skull are larger than in *V. vulgaris*, or than in most specimens of *V. montana* from the Himalayas.

Amongst the skins obtained from Eastern Turkestan and Ladák, some are pale-rufous, like Mr. Blyth's specimen, whilst in others there is an admixture of greyish and blackish tints owing to the prevalence of black tips on the hairs. The latter, which are probably younger individuals, approach *V. montana* in colouration. The difference is most marked on the external surface of the limbs, which are pure bright rufous in some animals, whilst in others they are dark rufous grey with a blackish margin to the white inner portion of the fore-leg. The under-fur in all these foxes, *V. flavescens* or *V. montana*, is similarly coloured, the woolly hairs being purplish-grey with, on the back, bright rufous tips. The colouration is, however, darker in *V. montana*, and, owing to the tips of the longer hairs being less developed, the colour of the under-fur shows more.

[1] J. A. S. B., xxiii, 1854, p. 729.

[2] J. A. S. B., xxii, 1853, p. 581.

In the plate, the upper figure represents the darker variety of *V. flavescens*, the lower the more rufous and typical form.

A specimen of a fox from Yárkand presented by Captain Biddulph to Mr. Hume, who has added it to the collection, looks at first sight as if it must be a different species. The hair is much shorter and thinner than in the other foxes, and that on the tail is so deficient, that there is nothing approaching a brush, and the tail resembles that of a domestic dog. This may be due to accident or ill condition, but the hair on the body, though not long, looks perfectly healthy. There is no woolly under-fur, and the hair is rather harsh. On the whole, I think this skin may be that of an animal which has just lost its long winter coat. That the loss of the long fur greatly alters the colour of foxes is a well-known fact.

The following is a description of this skin. All the middle of the back, from the nape to the insertion of the tail, is blackish-brown; sides of the body isabelline, many of the hairs on the posterior part of the flanks having very long black tips, so that the blackish back appears broader on the loins than behind the shoulders ; the hairs are dusky at the base on the loins, whitish near the shoulders; head rufous above, with scattered white tips to some of the hairs; upper lip whitish, as are the chin, throat and lower parts generally ; whiskers black; ears black externally except close to the head, with rather long whitish hair near the margins inside. External surface of shoulders and thighs rufous, with a few white and black tips mixed. Anterior portion of the whole fore-leg and foot, and of the tarsus and hind-foot, black, slightly grizzled with white tips and becoming more mixed with rufous hairs above, but quite black along the edge of the whitish inner-surface of the limbs. Hairs beneath the feet dusky-brown; below the tarsus rufous brown; tail dull rufous above, below whitish near the base, becoming much mixed with black towards the tip, which is entirely white both above and below; the hair on the back is about $2\frac{1}{4}$ inches long.

The following measurements, except those of the skull and leg bones, are, of course, only approximate, as they are taken on the skin :—

	ft.	inches.
Length of head and body	2	0
Tail, including hair at end	1	6
Total length	3	6

Length of ear from orifice	3·5
Length of skull from occipital plane to end of premaxillaries	5·95
Breadth of skull across widest part of zygomatic arches	3·1
Length of tarsus and hind-foot to end of claws	6·
Fore-foot and carpus to ditto	3·5

Since the above was written, I have seen a skin of a fox brought by Captain Biddulph from Kashmir, apparently *V. montana*, with a similar colouration to the specimen above described, except that the back is dark rufous. This specimen, shot in August, has evidently its summer fur. In all these foxes the deep rufous cross-like mark, formed by the dark back and the line across the shoulders, is conspicuously contrasted, in the summer vesture, with the pale sides of the animal, but disappears in the winter fur.

16. C. (Vulpes) sp.

1, Skin without skull purchased at Káshghar.

There is one skin purchased, like the others, in the Káshghar bazar, which differs from all the rest in being smaller and very much darker in colour. The difference in size is especially shown by the smaller feet. The dark colour is due partly to the prevalence of black tips to the fur, partly to the dark under-fur being more conspicuous, owing to the longer piles being fewer in proportion, and having shorter tips. It is probable that this is a different fox, but it is possible that it may be a young animal, for young foxes are sometimes much more dusky in colour than adults. It does not agree with the description of *V. ferrilatus*[1] to which Dr. Stoliczka at first sight thought it might be referred.

The general colour may be described as rufous iron-grey, grizzled with white tips to the hairs. The under-fur is dusky ashy-grey near the body, passing into chocolate-brown towards the extremities; the longer hairs are more or less rufous, white beyond the ends of the woolly under-fur, the tips of a large proportion being black; the upper surface of the head, middle of the back and a band along the tail are more rufous, there being comparatively few black hairs on the face except in a blackish patch on each side in front of the eye. The region below the eyes is brighter rufous, and the upper lip is whitish. The exterior surface of the legs are blackish with some rufous, and very short white tips to the hairs, the interior surface light-brown. The hairs below the feet and the tarsi are dull brown. The soles of the feet are much covered with hair as in *V. flavescens*. The ears are black outside except near the base. The hair of the tail is pale grey at the base, then tawny with black tips. The end of the tail is white.

In the process of preserving the skin, nearly all the hair has been removed from the inside of the ears; but one small tuft, which is black, remains in the middle of one ear. In *V. flavescens* all the hair inside the ears is pale isabelline. This difference tends to show that the small dark skin may belong to a distinct and undescribed species. It is useless, however, to give a name to a single imperfect specimen.

The foxes of Western Turkestan, according to Severtzoff, are *C. vulpes*, *C. melanotus*, and *C. corsac*. Hitherto neither of these has been found in Eastern Turkestan, unless *C. flavescens* be a mere variety of *C. vulpes*.

Family—*MUSTELIDÆ*.

17. Meles, sp. nov.

1 flat skin (without skull or feet) purchased at Káshghar.

I am unable to refer this skin to any known species. It differs in the colouration of the face from *M. taxus*, *M. canescens*,[2] *M. leucura*,[3] and *M. leptorhynchus*,[4] in all of which the white mark down the middle of the face extends to the nape, whereas in the Káshghar skin the light portion of the face terminates abruptly in front of the ears. It differs from *M. anakuma*[5]

[1] J. A. S. B., 1842, xi, p. 278.

[2] W. Blanf., Eastern Persia, ii, p. 44, Pl. III. The distinction of this species from *M. taxus* is shown to be doubtful by Mr. Alston, P. Z. S., 1877, p. 274.

[3] *Taxidea leucura*, Hodgs., J. A. S. B., 1847, xvi, p. 763, Pl. XXIX, XXX, XXXI: *Meles leucurus*, Gray, Cat. Carn. &c. Mam. B. M., 1869, p. 126.

[4] Milne-Edwards, Recherches pour servir à l'Histoire Naturelle des Mammifères, p. 190, Pl. XXV.

[5] Temm. et Schleg., Fauna Japon., Mam., p. 30, Pl. VI.

in being much greyer, whilst from *M. albogularis*[1] it may be at once distinguished by wanting the white throat. Another form found in Eastern Tibet has been described by A. Milne-Edwards under the name of *Meles obscurus*;[2] but it belongs to the genus or sub-genus *Arctonyx*, and the general colouration of this genus diverges considerably from that of the typical badgers.

Judging from the size of the Káshghar skin, it probably belonged to a rather smaller animal than *M. taxus*, and the fur is apparently rather softer. The colour is very similar; the hairs on the back being about $2\frac{1}{2}$ inches long, white at the base, with a brownish tinge towards the extremity; near the end they are black for about half an inch, the point being white, tail hairs the same, but rather longer, (about 3 inches at the end of the tail,) and with the black ring and white tips more developed; the middle of the forehead and nose brownish white; the brownish-black marks on each side from the nose, enclosing the eyes and ears, meet on the forehead rather in front of the ears, which are white anteriorly, black behind and inside; cheeks white, with a slight brownish tinge; lower parts and limbs black, except the inside of the thigh, which appears to have been white. Only the skin of the upper part of the hind limbs has been preserved.

Length of skin, 3 feet 2 inches, of which the tail measures 8·5 inches, and the hair at the end of the tail 3 inches.

In Western Turkestan, according to Severtzoff, *Meles taxus* is found.

18. Martes leucolachnæa, sp. nov., or *Martes foina*, var. *leucolachnæa*.

M. foina? J. A. S. B., 1875, xliv, Part 2, p. 106.
Sausar, Turki of Yárkand.

M. magnitudine colorcque ad M. foinam *proxime accedens, sed vellere multo molliore, lanugine albescente, distinguenda.*

1, skin, without skull, purchased at Yárkand.

This skin is dark sepia-brown in colour, the feet and tail being nearly black. On the throat and breast is a large white patch in the form of an irregular horse-shoe, the convexity directed forward, and each of the lateral extremities extending back beneath the fore arm. The belly is of the same colour as the back. The face is a little paler, being rather earthy brown, palest on the cheeks; the chin the same colour as the head. The ears have short white hairs along the margin, and longer greyish brown hairs inside. Whiskers black.

The fur is very fine and soft, consisting of long glossy dark brown piles, nearly 2 inches long in the middle of the back, and fine woolly under-fur, nearly white, but with a very faint ashy tinge, and rather more than an inch in length: the whitish colour shows distinctly throughout the body through the rather sparse longer hairs. The hair on the tail is blackish and very long.

The soles of the feet are principally covered with short hair, but there are naked pads to the toes, and a larger naked tri-lobed pad on the anterior part of the sole. There is also a small

[1] Blyth, J. A. S. B., xxii, 1853, p. 590.
[2] Recherches Mam., p. 338, Pl. LXII.

naked pad on the posterior portion of the fore feet (palma), only seen on turning up the hair. The pads are surrounded by short blackish hair; the claws are white.

The length of the skin (doubtless somewhat stretched) is 18 inches from nose to insertion of tail; tail $12\frac{1}{2}$ to the end of the longest hairs, which project $3\frac{1}{2}$ inches beyond the end of the tail proper.

A second skin, doubtless from the same species of marten, has since been brought from Eastern Turkestan by Dr. Scully, and presented to the Indian Museum. The fur is not so long, and the under-fur is not quite so white, being very pale ashy grey, but in all essential respects this skin agrees with that procured by Dr. Stoliczka, and it has the advantage that the skull, tail and limb-bones are left in the skin. On the label this specimen is marked from Sarikol, and there can be little, if any, doubt that the animal had been kept in captivity. That it was procured alive, or freshly killed, by Dr. Scully, is shown by his having recorded the weight and measurements. The skull is not quite adult, and has been somewhat injured, but still it is nearly, if not quite, full grown. The dimensions marked on the label are:—length 28 inches, tail 11·3. The skin measures now from nose to insertion of tail 18 inches, tail 11, of which $2\frac{1}{4}$ consist of hairs beyond the end; hind foot and tarsus from heel (a little contracted) 3 inches. The weight is recorded as 1 lb $10\frac{1}{4}$ oz.

There are also several marten skins in the Indian Museum, purchased from a Cabul merchant, who said they came from Bokhára. These skins have the same dark sepia-brown or blackish brown colour, white throat, glossy piles, and soft whitish under-fur as the Turkestan skins. A marten skull from Afghanistan, in the same collection, much resembles that taken from the skin brought by Dr. Scully. The form of the zygomata is, however, somewhat different.

In the list of Dr. Stoliczka's collections, published in 1875, this Yárkand marten-skin was assigned, with doubts, to *M. foina*, the European beech-marten. I had then no skin of that animal for comparison. I have since received both a skin and a skeleton from Dr. Peters, and another skin has been obtained by the Indian Museum. The conclusion to which I come is, that the Yárkand skins represent a different but nearly allied form. They agree with *M. foina* in having a white throat, and there is but little difference in colour, but the fur in the Asiatic form is longer, softer, and more glossy, and the under-fur much paler, being nearly white instead of brownish-grey. The fur of one of the Yárkand skins is almost equal in beauty and softness to that of the sable.

The skull *of M. leucolachnœa* approaches that of *M. foina* in type, and differs from that of *M. abietum*, being much broader than the latter, with a wider muzzle and less rounded outline above. The permanent pre-molars are not fully grown, and the third upper pre-molar on each side is but just appearing through the jaw. The hinder molars resemble those of *M. foina* more than those of *M. abietum*. Blasius[1] points out that the third upper pre-molar in *M. abietum* is concave outside; that the length of the fourth or flesh-tooth along the external margin equals the transverse diameter of the hindermost or tubercular molar, and the outer margin of the latter is attenuate and not incurved; whereas in *M. foina* the third tooth is convex externally, the length of the fourth exceeds the breadth of the fifth, and the outer margin of the hindmost tooth is incurved and bi-lobed[2] (*eingebuchtet, zweiklappig*). In the

[1] Säugth, Deutsehl., p. 212. See also, on the distinctions between *M. abietum* and *M. foina*, Hensel, Wiegmann's Archiv, 1853, p. 17.

[2] In the only skulls of *M. abietum* and *M. foina* (one of each) that I have at present for comparison, the proportion of the fourth to the fifth upper molar is as stated by Blasius. The other distinctions are less characteristic, and probably vary somewhat.

skull from Eastern Turkestan the length of the flesh-tooth exceeds the breadth of the hinder molar, but the latter is scarcely concave on its outer edge; and in its general form, especially in its inner portion considerably exceeding the outer portion in antero-posterior diameter, it approaches *M. abietum*.

The following are the dimensions of this skull (*a*). As the animal is not quite mature, the length of the adult skull would be rather more:—

	(*a*) Inches.	(*b*) Inches.	(*c*) Inches.	(*d*) Inches.
Length from occipital plane to end of premaxillaries .	3·15	3·2	3·3	3·15
Breadth across hinder part of zygomatic arches . .	1·85	1·95	2·05	1·82
„ behind post-orbital processes	0·82	0·71	0·77	0·75
„ of brain-pan at posteriortermination of zygomatic processes of squamosals	1·45	1·47	1·45	1·39
Length of upper flesh-tooth along outer edge . .	0·37	0·36	0·38	0·34
Breadth of upper hinder molar	0·32	0·33	0·32	0·31
Length of mandible from angle to symphysis . . .	1·95	2·05	2·15	1·93
Height of ditto	0·85	0·88	0·9	0·9

It should be repeated that this is the skull of an animal that has in all probability been kept in confinement. Some of the bones are injured, the injuries having apparently been produced during life.

The measurements marked (*b*) are those of the skull from Cabul already mentioned. The teeth resemble those in the Turkestan skull. To the measurement (*c*) I shall revert presently. Those under (*d*) are of a European skull of *M. foina*.

The differences from *M. foina* have been already pointed out, but there are two Asiatic martens to which the present form is allied, and it is as well to show why it does not appear to belong to either. Both, it should be premised, have been very imperfectly described.

The first, to which I was for some time inclined to refer this animal, is *M. toufœa*, Hodgson.[1] This is described from imperfect skins, brought from Tibet, without tails or skulls. The fur is said to be rich and soft, the "general colour smoky-brown, darker along the spine and on the limbs, but without marks, and paled to sordid yellowish hoary on the neck and head; head palest, except the mystaceal region and chin, which are embrowned; moustache moderate and dark brown. There are no rings on the inner or outer piles, which have both the smoky-brown hue of the exterior, only paler at the roots."

The last character appears to distinguish *M. toufœa* from the Turkestan marten, in which the very much paler colour of the underfur is a conspicuous character. I possess a specimen of a marten procured by Mr. Mandelli from Sikkim, and probably brought from Tibet. This marten agrees with Mr. Hodgson's description in the colouration of the fur, but it has the whole of the chin and breast white, whilst the chin in *M. toufœa* is said to be embrowned, and no mention is made of white on the throat or breast. The middle of the back, too, is not darker, as it is said to be in Mr. Hodgson's description.

In the Indian Museum are three stuffed specimens received from the Asiatic Society's collection, and identified with *M. toufœa* by Mr. Blyth.[2] They are labelled Tibet, and were presented by Mr. G. T. Lushington in 1845. As Mr. Lushington lived at Almora, it is almost certain that these skins came from Western Tibet. They are very light brown in colour on the head and body, the feet and tails being dark brown. The underfur is pink; it may perhaps

[1] J. A. S. B., 1842, xi, p. 281.
[2] Cat. Mam. Mus. As. Soc.. No. 194, p. 66.

have been slate-coloured originally, and have faded. The white breast extends to the fore-legs, and covers the whole breast and throat.

A skull extracted from one of these skins afforded the measurements marked (*c*) in the preceding table. This differs from the Turkestan skull more than the Cabul specimen does, being much broader across the zygomatic arches, and having a more convex frontal region.

The second Asiatic species referred to above is *M. intermedia*, of Severtzoff.[1] This name is given to specimens said to be intermediate in character between *M. abietum* and *M. foina*; the only intermediate character specified, however, is the colour of the throat. Severtzoff mentions some skins shown to him as "Kashgar sable," with peculiarly fine fur, and these may, perhaps, have been the same as the Eastern Turkestan species; but the underfur is said to have been darker than in Western Turkestan skins of *M. abietum* and *M. foina*, and the tail shorter, in this approaching the sable. In neither character do the specimens from Eastern Turkestan obtained by Drs. Stoliczka and Scully, nor the supposed Bokhara (or Cabul) skins in the Indian Museum agree with Severtzoff's descriptions.

Altogether I can only conclude that the marten of Eastern Turkestan is a race just distinguishable from *M. foina*, and that *M. intermedia* and *M. toufæa* are probably other races. Whether such forms should be considered specifically distinct or merely varieties is a difficult question, depending rather on convenience than facts. The present form can be either classed as *Martes leucolachnæa*, a sub-species or race of *M. foina*, or as *M. foina* var. Probably the martens, like the cats, comprise a large number of incipient species, imperfectly differentiated. This is Severtzoff's view also.

According to Pallas,[2] *M. foina* is only found in the extreme west of Siberia, but Severtzoff includes it in the fauna of Western Turkestan, and Père David obtained it in Northern China,[3] so that the occurrence of a variety in Eastern Turkestan is highly probable.

Skins of *M. abietum* are said by Dr. Leith Adams[4] to be brought from Afghanistan, and sold in the bazaar of Peshâwar; but it is not improbable that pale skins of *M. leucolachnæa* or *M. intermedia* may have been taken for those of the pine-marten, and specimens bought in a bazaar may be brought from a great distance, so that the purchase of these skins in Ladák and Yárkand by no means prove that they inhabit the country. *M. abietum* is not recorded amongst the Chinese mammals by Père David.

19. Martes toufæa ?

Hodgson, J. A. S. B., 1842, XI, p. 281.

1, 2, skins (without skulls, and one without feet) purchased at Leh.

At first I was disposed to consider these two skins merely specimens of the last, killed in summer; but there is a considerable difference in the fur, both in colouration and texture, and the feet of the present species have the soles more completely covered with hair, the pads left being very small. The colour is much paler, although the underfur is darker, the fur is shorter and much less glossy, and the white of the throat more extended.

The general colour is rather pale sepia-brown with a greyish tinge (almost earthy-brown) throughout the body, the underfur towards the ends being the same colour as the longer piles,

[1] Turk. Jev., pp. 61, 80; Ann. Mag. Nat. Hist., 1876, Ser. 4, Vol. xviii, p. 46.

[2] Zoog. Ros. As., i, p. 87.

[3] Nouv. Arch. du. Mus., vii, Bulletin, p. 92.

[4] P. Z. S., 1858, p. 517. Since the above was in print, I have received a skin of *M. leucolachnæa* from Major St. John. This skin came from Hazára.

and pale ashy grey elsewhere. Face the same colour as the back; ears with short white hairs round their margins, brown outside, brownish white within; feet and tail dark sepia-brown, the hair on the latter longer than on the back; soles of feet hairy, except on the small pads. Whole throat and breast, with the chin and upper lip close to the gape, white, except two or three brown spots in the middle of the throat; fur very soft, the longer hairs in the middle of the back nearly $1\frac{1}{2}$ inches long; woolly underfur about $1\frac{1}{8}$ inches in length. In the stretched skin the head and body measure about 15 to 18 inches, tail 9; hairs at end $3\frac{1}{2}$; total 30 inches.

Mention was made in the preceding notes on *Martes leucolachnæa* of a specimen from Sikkim (and probably brought from Tibet) that agreed somewhat in colouration with the description of *M. toufæa*. This skin resembles that from Leh so closely that, so far as species of martens can be determined by the skin alone, I have but little hesitation in considering both the same; both have the same amount of white on the breast, extending to the fore legs in one direction, and to the chin in the other, or much further than in *M. leucolachnæa*; but this character is very probably variable.

The skull of this Eastern Tibetan specimen is imperfect, only the anterior portion having been preserved in the skin. This part, however, despite a considerable resemblance to that of the other skulls from Central Asia noticed under *M. leucolachnæa*, is distinguished by being considerably smaller in size with much smaller teeth. The teeth and the sutures show the animal to have been adult, and even aged. The breadth across the zygomatic arches is 1·8 inches, and behind the post-orbital processes 0·7. The length of the penultimate upper molar or flesh-tooth is 0·31, and the breadth of the last or tubercular molar 0·3. The nearest approach in form is made by the skull from Western Tibet, the measurements of which are given under (*c.*) on p. 28 and both have the same characteristic convexity of the frontal region between the orbits, so that it is possible that the differences in size, both of the skull and teeth, may be sexual. The colouration of the skins is, however, widely different.

20. Mustela stoliczkana. Pl. I a, fig 3, and Pl. II b.

W. Blanf., J. A. S. B., 1877, xlvi, Part 2, p. 260.
Agha Makan, Turki of Yárkand.

Mustela *ad* M. vulgarem *proxime accedens, sed valde major, superne fusco-arenaria, subtus albida, caudâ longiore, quartem partem totius longitudinis subæquante, cum dorso concolore; labris ambobus genisque inferioribus albis, maculâ utrinque post angulam oris fulvâ, alteráque ante oculum utrumque albâ, palmis plantisque confertim pilis indutis. Long. tota cum caudâ 12·2, caudæ, pilis inclusis, 3, cranii 1·8, pedis posterioris a calcaneo 1·4 poll. Angl.*

1, dried skin purchased at Yárkand.

Colour pale sandy-brown above, the hairs rather paler and whitish at the base, white below. Fur short, dense and soft. Tail throughout the same colour as the back. There is a small white spot close to the anterior angle of each eye, and a rather larger sandy-brown spot a little behind the gape in the lower part of the cheeks, which are white to within a short distance below the eye. Upper whiskers dark brown towards the base, and of about

the same length as the head. Fore feet white, mixed with pale brown above, hind feet only whitish at the edges; soles of all the feet thickly clad, only the toe-pads being naked, and even they are almost concealed by the long hair. Tail nearly cylindrical, about one-third the length of the head and body.

The whole length, measured by Dr. Scully when the animal was fresh, and noted on the ticket, was 12·2 inches, the tail, of which the vertebræ are preserved, now measures 3 inches including the hair at the end, or 2·3 without it. The hindfoot and tarsus are 1·4 inches long without the claws. Fur on the back about 0·3 inches long. The weight marked by Dr. Scully on the label was 5·2 oz. [1]

The skull is slightly imperfect behind, the occipital plane having been cut away; but as the occipital crest remains, the total length can be measured with close approximation. The cranium shows the specimen to have been just adult, the dentition being perfect, although the sagittal crest is only rudimentary. The following are the dimensions:—

	Metre.	Inches.
Length of skull (approximate) from occipital plane to alveolar margin	·0425	1·75
Breadth of brain-case across parietal region	·021	0·83
Ditto across zygomatic arches	·024	0·98
Ditto behind post-orbital processes	·01	0·4
Length of suture between nasal bones	·007	0·28
Length of bony palate from anterior alveolar margin to the opening of the posterior nares	·0185	0·75
Length of carnassial tooth along outer edge	·005	0·2
Breadth of tubercular (hinder) molar	·0038	0·15
Breadth of bony palate between hinder molars	·0075	0·3
Length of lower jaw from condyle to symphysis	·025	1·
Height of same from coronoid process	·0125	0·5

Amongst the collections brought by Dr. Stoliczka from Eastern Turkestan was the skin of a weasel which had been kept in confinement. Judging from the skin alone, the animal appeared chiefly to differ from the common European weasel in colour, and it was difficult to say how far this difference was due to the circumstances under which the individual had been kept. Although I strongly suspected that it was a distinct species, still I thought it safer not to form conclusions from a single skin, and in the list of species, (J. A. S. B., 1875, Vol. lxiv, Pt. 2, p. 106,) I noted the specimen as *Mustela vulgaris?* var.

A year later Dr. Scully brought from Turkestan another skin of the same weasel, but the second specimen had belonged to a male wild individual. This skin was also entrusted to me, together with some other interesting specimens, for description. On comparing this second specimen more carefully with *M. vulgaris*, I found that it differed, not only in colour, but in size, being a much larger animal. The length measured on the fresh carcase by Dr. Scully shows that the Yárkand weasel is nearly as large as an ermine, whilst the tail, the vertebræ of which are for the most part preserved, appears to be proportionally longer than in the common weasel. The weight and some other details are also carefully recorded on the label.

[1] The weight of the common weasel, according to Pallas, Zoog. Ros. As., i, p. 98, is only 2 ounces and a drachm in the largest individuals, 1½ oz. in smaller animals, chiefly females.

21. Mustela temon?

Hodgson, J. A. S. B., 1857, xxvi, p. 207.

There is in the Indian Museum a specimen of a *Mustela*, brought by Dr. Henderson from the first Yárkand expedition. It was obtained just north of the Sánju Pass in Yárkand (Lahore to Yárkand, p. 99), and appears to have been identified by somebody with *M. temon*, Hodgs., for it is labelled with that name. Unfortunately this skin has been mounted and exposed to the light, so that it is difficult to say how far time may have altered the original colour. There is no skull, and it is impossible to say if the specimen is adult.

In general form this skin agrees with *M. temon*, but is decidedly smaller. The tail is about $\frac{2}{3}$ the length of the body and head, and throughout of the same colour as the back, light brown, or, as Hodgson well expresses it, brunnescent fawn, but the lower parts are white, not yellow; and I can detect no canescent tinge on the chin and limbs. The upper lip is whitish, the whiskers dark brown (they may have been black originally), the soles of the feet covered with longish hair.

Compared with a skin of *M. temon* from Sikkim, for which I am indebted to Mr. Mandelli, this specimen is much paler; and if it be adult, the difference in size alone would show it to be distinct. The tail also appears proportionally longer. It is, however, by no means impossible that the Sánju skin may have belonged to a young specimen of *M. temon*, and the pale colour may be due to the drier climate. At the same time I am inclined to believe that a distinct species is indicated.

22. Mustela erminea.

Linn., Syst. Nat., i, p. 68.

In the Indian Museum there is a specimen of the ermine brought by Dr. Henderson from the first Yárkand expedition. It is probably that which Dr. Henderson mentions his having shot near Drás, west of Ladák.[1]

23. Lutra, sp.

In Dr. Stoliczka's diary for the 28th—31st August, written at Leh, he mentions the occurrence of a small species of *Lutra* in the Indus, and states that he could not procure a specimen.

A skin obtained by Captain Biddulph in Gilgit has since been presented by him to the Indian Museum. Unfortunately the skull is wanting, and the determination of species of otter from the skin alone is almost impossible. The skin, too, is that of a large, not of a small otter, and it is quite possible that a different species from that occurring near Gilgit may be found at Leh. No difference can be traced between the Gilgit skin and that of the common European otter, with which Mr. Blyth[2] identified a Himalayan form, referred at one time to *L. monticola*, Hodgson.

[1] Lahore to Yárkand, p. 42.

[2] Cat. Mam. Mus. As. Soc., p. 73.

The upper parts in the Gilgit skin are brown, the long hairs being pale towards the tips; the woolly under-fur is white at the base, rich brown towards the ends. The naked patch on the muzzle, between the nostrils, is produced into an obtuse point in the middle below; above it is higher in the middle and over each nostril, and has a concave margin between. Length of head and body 34, tail 17·8: these measurements being those of a dried skin are of course of small value.

Prejevalski notices the occurrence of an otter, which he calls *Lutra vulgaris*, on all lakes containing fish in abundance in the neighbourhood of Lob-nor.

Family—*URSIDÆ.*

24. Ursus, sp.

Although the circumstance is not mentioned in Dr. Stoliczka's diary, I am informed by both Captain Biddulph and Captain Trotter that traces of bears were seen on the Pámir. The species here occurring may very possibly be the pale-coloured form described by Severtzoff as inhabiting the Thian Shan, and named by him *U. leuconyx*.[1] It is doubtful whether this form is identical with the Himalayan *U. isabellinus*, or whether it is a pale *U. arctos*, as *U. isabellinus* itself is thought to be by some naturalists. Between the Himalayan area and the Pámir there is a broad tract in the Indus valley in which no bears are known to occur.

According to Prejevalski[2] there are two different kinds of bears on the Thian Shan, the one dark brown, with white claws, supposed to be *U. leuconyx*, the other a much paler animal, found only on high, treeless plateaux, and identified by Prejevalski with *U. isabellinus*. Apparently no comparison of these forms, by means of skulls, has been made, and the colouration may vary with the locality.

Order RODENTIA.

Family—*SCIURIDÆ.*

25. Pteromys inornatus.

Geoffr., Jacquemont, Voyage dans l'Inde, iv, Zoologie, Mammifères, p. 62; Atlas, ii, Pl. IV.

1, Sonamarg, Kashmir.

The original figure of this species differs much in colouration from all specimens that I have seen, being much too pale, and showing nothing of the grizzled back.

26. Arctomys aureus. Pls. XI, XI*a*.

W. Blanf. J. A. S. B., 1875, xliv, Pt. 2, pp. 106, 123.

? A. caudatus, Severtzoff, Turk. Jev., pp. 61, 81; Ann. Mag. Nat. Hist., July, 1876, Ser. 4, Vol. xviii, p. 50, *nec* Jacquemont.

A. *aureo-fulvus, dorso nigro lavato, capite antice fulvescenti-cano, maculo fusco ad rostri extremitatem signato, ventre interdum leviter ferruginescente, caudâ tertiam partem*

[1] Turk. Jev. p. 80; Ann. Mag. Nat. Hist., July 1876, Ser. 4, Vol. xviii, p. 43.

[2] Pet. Mitth. Erg. hft., No. 53, p. 3: From Kulja, &c., p. 38.

corporis capitisque æquante, fulvâ, nigro breviter terminatâ; pilis elongatis corporis omnibus ad basin fuscis. Long. a rostro ad basin caudæ circiter 18 (in corio dessiccato), caudæ vertebrarum 6, palmæ 2, plantæ fere 3, cranii 3·7 poll.

1, 2, 3, skins; 4, 5, skulls, Kaskasu pass, 13,000 feet high, on the road from Káshghar to Sarikol and the Pámir.

General colour tawny to rich brownish yellow, the dorsal portion conspicuously tinged with black from all the hairs having black tips, but these are far more conspicuous in some specimens (? males) than in others; face grey to blackish with a rufous tinge, covered with black and whitish hairs mixed, about half an inch long on the forehead. The black hairs on the face are more prevalent in those specimens (perhaps males) which have the blackest backs; the middle of the forehead is, in some cases, more fulvous. On the end of the nose is a blackish-brown patch, and there is a narrow band of black hairs with a few white mixed round the lips; the sides of the nose are paler; whiskers black. Hairs of the back $1\frac{1}{4}$ to $1\frac{1}{2}$ inches long, much mixed with woolly fibres, dark slaty at the extreme base for about $\frac{1}{4}$ inch, then pale straw colour, becoming deeper golden-yellow towards the extremity, the end black. In the blackest specimens the black tips are wanting on the posterior portion of the back. Tail yellow, the same colour as the rump, except the tip, which is black for a length varying from an inch to about $2\frac{1}{2}$ inches (in 3 specimens out of 4 it does not exceed an inch); hairs of the tail about 2 inches long, brown at the base. Lower parts rather browner and sometimes with a rufous wash, the hairs shorter and thinner, chocolate brown at the base, without the short woolly underfur, which is very thick on the back. Feet above yellowish tawny like the sides.

The lengths measured on the dried skins are—

Nose to insertion of tail	$16\frac{1}{2}$ to $18\frac{1}{2}$ inches.
Tail	5 to $6\frac{1}{2}$ „
Hairs at the end	$1\frac{1}{2}$ to $1\frac{3}{4}$ „
Fore-foot (palma) measured to the end of the toes, but not including the claws	2·1
Middle toe without claw measured below	0·8
Claw measured above	0·6
Hind-foot (planta) similarly measured	2·9
Mid toe without claw	0·8
Claw	0·52

This is a much smaller species than *A. caudatus*; the tail is rather shorter in proportion, and is paler in colour, with less black at the end. The animal is also distinguished by the absence of the ferruginous tinge on the legs, and the underparts generally are much less rufous. It is a very different species from *A. himalayanus* (*A. bobac* of several authors), being smaller, much more yellow and less grey in colour, with a longer tail.

Of all the Himalayan species it agrees best with *A. hemachalanus*, Hodgson, but the latter is a yet smaller form with shorter tail, shorter hair, and different in colour, being described as "dark-grey with a full rufous tinge, which is rusty and almost ochreous red on the sides of the head, ears, and limbs." Now *A. aureus* cannot be called dark-grey, and in the specimens obtained the ferruginous tint is confined to the abdomen. The skin and skeleton of a marmot from Sikkim in the old Asiatic Society's collection (*C, Ca*, of the list in Blyth's catalogue) belong, I believe, to *A. hemachalanus*. The skull differs widely from that of *aureus*, being smaller and much shorter in proportion to its length, besides numerous minor

differences. The skin too differs much in colour, being far greyer, and the tail is considerably shorter. Some other specimens have since been obtained in Calcutta, and I have seen a living animal in captivity at Darjiling. Singularly enough, out of 6 specimens known to me, and 4 that I have personally examined, not one was wild,—all had been kept in confinement. Still as all agree well in characters, there can be no question that the species is well marked and distinct.[1]

A. baibacinus, Brandt, is a very much smaller animal, the skull measuring only 43 millemetres,[2] and it has a short tail like *A. himalayanus*, not more than a quarter the length of the body.

The skull of *A. aureus*, though very much smaller, approaches that of *A. caudatus* more nearly than any of the other Himalayan marmots. The zygomatic arch in the latter, however, is nearly twice as deep and convex below, whilst that in *A. aureus* is nearly straight, and the nasal bones are broader behind in *A. caudatus*. The pterygoids are very differently shaped in the two species. The following are the dimensions of an adult skull of *A. aureus* :—

	Metre.	Inches.
Length from occipital plane to anterior end of nasals	·094	3·7
Breadth across widest part of zygomatic arches	·057	2·25
Do. behind postorbital processes	·017	0·65
Length of nasal bones	·038	1·5
Breadth of do. in front	·0165	0·64
Do. do. behind	·0105	0·42
Length of molars in upper jaw taken together	·020	0·82
Length of lower jaw from angle to symphysis	·066	2·6
Height of do. at coronoid process	·035	1·4

I learn from Captain Trotter that *A. aureus* was seen abundantly on the return journey from the Pámir to Yárkand in May about the Kaskasu and Torat passes, at an elevation of 11,000 to 13,000 feet. On the outward journey towards the end of March, none had yet come out of their holes.

The species identified with *A. caudatus* by Severtzoff can, I think, scarcely be that species, and the very few characters given agree with *A. aureus*. The animal is said to have been "yellow with fine black, longer hair, the head was darker and blackish." Length from the tip of the nose to the root of the tail 14 inches 2 lines, tail 8 inches 5 lines. This is

[1] For a dissertation on the species of marmot inhabiting the Himalaya, Tibet, and adjoining regions, see J. A. S. B., 1875, vol. xliv, Pt. 2, p. 113. I have there shown that independently of *A. aureus*, and of *A. dichrous* (Anderson, Ann, Mag. Nat. Hist., October, 1875, Ser. 4, vol. xvi, p. 283, three species inhabit the Himalayas or Tibet, viz., *A. caudatus*, *A. himalayanus*, and *A. hemachalanus*. Dr. Sclater has since pointed out to me that the two last names are, in fact, identical, and that consequently one must be changed. I would gladly retain *A. hemachalanus* and alter *A. himalayanus*, as was proposed by Hodgson himself, to *A. tibetensis*; but I fear this would be opposed to the laws of nomenclature, as *A. himalayanus* was the name first given, and moreover it would lead to confusion, for the name *A. tibetanus* has been adopted in the British Museum for *A. hemachalanus*. On the other hand, to follow the British Museum nomenclature would be ridiculous, for *A. himalayanus* is the Tibetan species, and is the original *tibetensis* of Hodgson, not *A. hemachalanus*. Under these circumstances, I see no other resource than to propose a new name for *A. hemachalanus*, and I think it should be called after its discoverer. The synonymy would then stand thus:

A. HODGSONI.

A. hemachalanus, Hodgson, J. A. S. B., 1843, xii, p. 410.

"*A. tibetanus* Hodgs." Gray, Cat. Mam. Birds Nepal, p. 24 (1846); 2nd edition, p. 12. (1863), *nec A. tibetensis*, Hodgs. J. A. S. B., 1843, xii, p. 409.

"*A. bobac*, Schreb." partim, Blyth. Cat. Mam. Mus. As. Soc., p. 108 (1863), *nec* Schreber.

"*A. hemachalanus*, Hodgson," Jerdon, Mam. Ind., p. 182 (1867). W. Blanf., J. A. S. B., 1875, xliv, Pt. 2, p. 122.

[2] A. Milne Edwards, Rech. Mam., p. 312.

far too small for *A. caudatus*. The locality whence Severtzoff's only specimen, since lost, was procured, was "south of the Aulje-ata, in the mountain chains between Tallas and Chirchik." This is north of Khokand and about 350 miles north-west of the Kaskasu pass, which again is at least 200 miles north of any place known to be inhabited by *A. caudatus*.

Arctomys dichrous,[1] from the mountains of Cabul, is a very different species from *A. aureus*, being much less yellow, without any black on the back, and having the upper parts pale dull tawny and the lower parts rufous brown. It appears also to be a smaller animal. In the Indian Museum there is a skull of a marmot,[2] brought by Sir A. Burnes from Cabul, and much resembling that of *A. aureus*. It is however distinguished by being broader across the zygomatic arches, by having much broader and differently shaped nasal bones, and by a few other differences. This skull may perhaps have belonged to an adult of *A. dichrous*, the typical specimens of which are immature, but it is impossible to determine this; the nasal bones are similar, but the skull of *A. dichrous* appears longer in proportion to the breadth, besides being very much smaller, although all the molars are through the jaw.

27. Arctomys himalayanus. Pls. XII, XII*a*.

Hodgson, J. A. S. B., 1841, x, p. 777.—W. Blanford, J. A. S. B., 1875, xliv, p. 121.

A. himalayanus, potius *tibetensis*, Hodgs., J. A. S. B., 1843, xii, p. 409.

"*A. bobac*, Schreb.," partim, Gray, List Spec. Mam. Coll. B. M., 1843, p. 148.—Horsfield, Cat. Mam. I. H. Mus., p. 164 (1851).—Blyth, Cat. Mam. Mus. As. Soc., p. 108 (1863).—Jerdon, Mam. Ind., p. 181 (1867).—Anderson, P. Z. S., 1871, p. 560.—*nec* Schreber.

A. tataricus, Jameson,[3] L'Instit. 1847, xv., p. 384.

"*A. tibetanus*, Hodgson," Fitzinger, Sitzb. k. k. Akad. Wiss. Wien., 1867, lv, i, p. 491.—Adams, P. Z. S., 1858, p. 521.

A. robustus, A. Milne Edwards, Nouv. Arch. Mus. Hist. Nat., vii, Bulletin, p. 92, (1870). Recherches Mamm., i, p. 309, Pl. XLVII, XLIX, fig. 2.

"*? A. baibacinus*, Brandt," Severtzoff, Turk. Jev., p. 61, *nec* Brandt, *teste* Severtzoff, J. A. S. B., 1875, xliv, Pt. 2, p. 126; Ann. Mag. N. H., July, 1876, Ser. 4, xviii, p. 50, note.

Of this marmot no specimens were procured by Dr. Stoliczka during his last expedition, but I have examined the three brought from the Sánju pass in the Kuenlun range, south of Yárkand, by Dr. Henderson, and described by Dr. Anderson in the Proceedings of the Zoological Society, *l. c.* So far as I am able to judge, I quite concur with Dr. Anderson in assigning them to the species originally described by Hodgson from Tibet, and which was referred by Gray, Blyth, Anderson, and other writers, to *A. bobac*. It is, however, a much larger species than the *Bobac*.

I have already entered into the confused synonymy of this Himalayan and Tibetan marmot in the Journal of the Asiatic Society of Bengal (*l. c.*), and need not recapitulate further than to point out that the species is probably the *A. tartaricus* of Jameson, the description of which I have been unable to consult, and the *A. robustus* of M. Milne Edwards from Eastern Tibet. The latter species, as figured in the "Recherches," appears

[1] Anderson, Ann. and Mag. Nat. Hist., October, 1875, Ser. 4, xvi, p. 283.

[2] One of the specimens referred by Mr. Blyth to *Arctomys bobac* in his Catalogue of the Mammalia in the Museum Asiatic Society, No. 348 *E*, p. 109.

[3] This reference is quoted from Wiegman's "Archiv," no copy of the work named being available.

much more dark-coloured, but in a footnote attention is called to the fact that the plate has been over-coloured by the draftsman.

By the kindness of Mr. Mandelli of Darjiling, I have been enabled to examine specimens of *A. himalayanus* from the portion of Tibet north of Sikkim. As this locality is at no great distance from Northern Nepal or the adjoining districts in Tibet, whence Mr. Hodgson's types were derived, it may fairly be inferred that Mr. Mandelli's specimens in all probability resemble those originally described. The skins differ but little from those of Sánju; they are a little greyer in tint and darker in the face, but the distinction is trifling, and the dimensions appear similar. The skull of one of Mr. Mandelli's specimens measures 101 millimetres in length by 67 in breadth, and is consequently broader in proportion to its length than the Sánju skull, of which the measurements are given below, and which is figured on Pl. XII*a*. The former is also rather less high, and the nasal bones are shorter and more convex. The skull of *A. robustus* again, as figured in the "Recherches," differs from the Sánju specimen in having a narrower frontal region and somewhat narrower and shorter nasals. It is probable that a larger series of these animals would show other cranial distinctions, for marmots live under the most favorable conditions for producing permanent varieties; each colony or group of families being isolated, and frequently at a distance of many miles from the next colony, so that the two, in all probability, rarely, if ever, breed with each other. I am disposed to think that it is most convenient to consider all these short-tailed Tibetan and Kuenlun marmots as varieties of the same species.

Dr. Severtzoff found a marmot in the eastern mountains of Russian Turkestan above an elevation of 4,000 feet, and at first identified the species with the *A. baibacinus* of Brandt from the Altai, but subsequently, in conversation with Mr. Dresser, suggested that the Turkestan form might be *A. robustus* of Milne Edwards. This opinion requires confirmation, no specimens having been compared so far as I know, but should it prove correct, the range of *A. himalayanus* (*A. robustus*) must extend to the Thian Shan or its branches.

In a Sánju specimen of *A. himalayanus*, the ears are barely ¾ inch high from the orifice; the fore-foot (palma) measures 2·5 inches without the nails; the hind-foot (planta) 3·25.

The following are the dimensions of a skull:—

	Met.	Inches.
Length from occipital plane to anterior end of nasal bones	·105	4·13
Breadth across widest part of zygomatic arches	·066	2·58
Do. behind postorbital processes	·0185	0·73
Length of nasal bones	·045	1·76
Breadth of do. in front	·018	0·7
Do. do. behind	·010	0·38
Length of molars in upper jaw taken together	·024	0·95
Do. lower jaw from angle to symphysis	·068	2·7
Height of do. at coronoid process	·043	1·7

Dr. Stoliczka mentions in his diary that *Arctomys bobac* (*A. himalayanus?*) was seen at Rimdi north of the Pangong lake in Ladák.

28. Arctomys caudatus. Pls. XIII, XIII*a*.

Jacquemont, Voyage dans l'Inde, iv, p. 66, Pl. V.—W. Blanf., J. A. S. B., 1875, xliv, Pt. 2, p. 122.
A. bobac, Adams, P. Z. S., 1858, p. 521, *nec* Schreber.
A. hemachalanus, Anderson, P. Z. S., 1871, p. 561, *nec* Hodgson.

No specimen of this, the common marmot of Ladák, is included in Dr. Stoliczka's collections, but he had, I believe, obtained specimens in his former journey. I have already

entered at full length into the question of the synonymy of this and other Himalayan marmots in the paper already mentioned, published in the Journal of the Asiatic Society of Bengal,[1] and need only recapitulate my conclusions here without entering into details.

The " red marmot " appears to be the common species of Ladák, and certainly is that of which the skins are usually obtained in Kashmir, but owing to the manner in which the names of different marmots have been confused by various writers, it is almost impossible to ascertain at present the relative distribution of this species and *A. himalayanus*, the " white marmot " of Adams. Anderson identified skins from Sikkim with a typical specimen which he described from the Zoji-la pass between Kashmir and Drás. This last specimen I have examined, but the Sikkim specimens are not at present accessible. From a number of enquiries, however, I believe it is highly improbable that *Arctomys caudatus* inhabits the Eastern Himalayas, and if the specimens supposed to be from Sikkim are really *A caudatus* the locality is almost certainly erroneous.

Jacquemont's type was procured near the Zoji-la, at a place which he calls Gombour or Gombur, close to the head of the Sind valley in Kashmir, but on the opposite watershed, that of the Indus, and in the valley of a stream running into the Dras river. Dr. Anderson's specimen was procured from probably the same locality by Dr. Henderson when accompanying Mr. Forsyth on his first expedition to Yárkand.[2]

Adams[3] distinguished the present species as the red marmot, which he called *A bobac* of Schreber.

Blyth[4] referred all the Himalayan marmots to one species, which, following Gray,[5] he also called *A bobac*, Schreber. Jerdon[6] separated *A hemachalanus*, Hodgson's long-tailed marmot, and gave as one of the native names *Drun* of Kashmir; but he left the proper name for the Drun, *A caudatus*, as a synonym of the short-tailed Himalayan marmot, his *A bobac*. Anderson adopted Jerdon's synonymy. The true *A hemachalanus* of Hodgson, however, is a much smaller species and differently coloured, so that Jacquemont's name must be preserved for the " red marmot " of Kashmir and Ladâk.

Arctomys caudatus is one of the largest species of marmots, being nearly two feet long, exclusive of the tail, which measures, with the hairs at the end, half as much more. The general colour is yellowish tawny, more or less washed with black on the back, and with all the underparts and limbs rusty red. In same specimens (males ?) the back is very much blacker than in others, the hairs being dusky or black throughout, whilst other specimens have only the tips of the hairs black. In the specimen brought from the Zoji-la by Dr. Henderson, the fore-foot (palma) measures, without the claws, 2·3 inches, the hind-foot 3·4, and the following are the measurements of the skull :—

	Metre.	Inches.
Length from occipital plane to anterior end of nasal bones . .	·105	4·12
Breadth across widest part of zygomatic arches	·066	2·6
Do. behind postorbital processes	·016	0·63
Length of nasal bones	·042	1·67
Breadth of do. in front	·020	0·8
Do. do. behind	·017	0·67
Length of molars in upper jaw taken together	·0235	0·95
Length of lower jaw from angle to symphysis	·074	2·93
Height of do. at coronoid process	·041	1·6

[1] Vol. xliv, 1875, Pt. 2, p. 113.
[2] Lahore to Yarkand, p. 38.
[3] P. Z. S. 1858, p. 521.
[4] Cat. Mam. Mus. As. Soc., p. 108.
[5] List Sp. Mam. Col. B. M., p. 148.
[6] Mam. Ind., p. 182.

In his paper on *Lagomys curzoniæ* Dr. Stoliczka[1] mentions that a marmot is found up to 17,000 feet in Ladâk. The species was probably *A caudatus*.

Family—*MURIDÆ*.

29. Arvicola blythi. Pl. VIII, fig. 2, Pl. Xb, fig. 1.

W. Blanf., J. A. S. B., 1875, xliv, Pt. 2, p. 107.

Phaiomys leucurus, Blyth, J. A. S. B., 1863, xxxii, p. 89.—Theobald, J. A. S. B., 1862, xxxi, p. 519; nec *Arvicola leucurus*, Gerbe.

Arvicola *fuscescenti-fulvus subtus isabellinus, caudâ fulvâ, quartam partem totius longitudinis subæquante vel excedente, auribus rotundatis mediocribus, sparsim pilosis, palmis pentadactylis, ungue pollicari parvo obtuso, dentibus molariis similibus iis* A. mandarini, *molario ultimo maxillari postice magis producto, angulo interno postico ejusdem acutiore, dente anteriore mandibulari antice angulo fortiore interno munito. Long. sine caudâ 4—4·5, caudæ 1·25—1·35, cranii 1, auris 0·4, plantæ 0·8 poll.*

1, 2, 3, (2 skins and one specimen in spirit) Tánkse, 13,000 feet; 4, 5, (one skin and one specimen in spirit) Lukong on the Pankong lake; 6 (skin) unlabelled.

I regret to be obliged to confer a new name upon this vole. I have gone through a mass of literature relating to *Arvicola*, in the hopes of finding grounds for maintaining the genus *Phaiomys*;[2] but I do not think it can be upheld for the reasons given beneath, and if it be, as I believe, identical with *Arvicola*, the name *leucurus* is forestalled.

I will first give a somewhat fuller description of this species and its dentition, and I will then proceed to the question of its general relations.

General colour above yellowish-brown, below pale-isabelline (brownish-white). The fur is soft and rather variable in length; in two specimens (which are apparently acquiring the winter coat) it is about 0·35 inch long on the middle of the back; in two others it is nearly half an inch long and softer; the basal portion throughout, amounting to more than two-thirds of the length on the upper surface, and about one-half on the lower, dark-slaty, uniform in texture; the tips of two kinds—the finer isabelline, the coarser and longer dark-brown, almost black. Upper part of the head the same colour as the back, ears round, of moderate size, thinly clad with pale-brown (isabelline) hairs inside, more thickly and with longer hairs outside. Upper whiskers dark-brown, lower whitish, the longest nearly an inch in length. Feet above the same colour as the abdomen; soles naked; claws compressed, horn-coloured; ungual phalanx short, furnished with a blunt compressed claw. Tail cylindrical, distinctly ringed, covered with short light-brown hair, nearly the same colour as that of the lower parts.

Dr. Stoliczka in his notes gives the following dimensions and particulars.

"Its length is 4 inches, and the tail 1·35; ears round, very sparsely hairy inside; iris black, with an outer blue ring; nose black; soles pale, fleshy brown."

One of the specimens in spirit (the two are of precisely the same size) measures :—

	Inches.
Length in a straight line from nose to insertion of tail	3·7
Do. of tail	1·1
Height of ear from orifice	0·33
Breadth of ditto	0·37
Do. of fore-foot and claws	0·45
Length of tarsus, hind-foot and claws	0·82

[1] J. A. S. B. xxxiv, 1865, p. 111.

[2] If the genus be retained, it should be written *Phaiomys*.

These measurements would of course be for the most part rather more in fresh specimens.

The following are the dimensions of a skull :—

	Metre.	Inches.
Length from occipital plane to end of premaxillaries . .	·026	1·03
Breadth across zygomatic arches	·017	0·67
Do. between orbits	·004	0·15
Length of nasal bones	·008	0·3
Breadth of ditto in front	·0035	0·13
Length of upper molars taken together	·007	0·28
Distance from incisors to upper molars	·0095	0·38
Length of lower jaw from condyle to symphysis . .	·019	0·75

The nasal bones are suddenly constricted at rather less than half their length from the front; thence they continue nearly the same width to the posterior extremity, where they are rounded. The incisors are orange in front, the upper pair sometimes with a very shallow groove down the middle. The anterior molar in the upper jaw consists of five prismatic lobes, and has three salient angles inside and three outside; the second consists of four lobes with two angles inside and three outside; the third of four lobes, the last being irregularly shaped and turned round at the end so as almost to form a fifth, and with three salient angles, the hindmost less prominent, inside, and three outside. In the lower jaw the anterior molar has four salient angles externally, five internally. The second tooth consisting of five prisms has three angles on each side, the third tooth consists of three lobes, and has three projections inside and two very small on the outside.

On one of the labels it is stated that this species lives in holes in grassy places and fields. Stoliczka in his diary mentions finding it in the range north of Kashmir as well as on the Pankong lake. Mr. Theobald's original specimens were from the Tso-moriri,[1] between Spiti and the Pankong lake, and he noticed its abundance on the shores of the lake where he frequently found that its holes "were ranged in a long line against a bank, and usually extended so far, that all attempts to capture an animal by digging or flooding the holes with water proved fruitless." He adds: "After infinite trouble, however, I managed to dig out an adult female, which on examination I found to contain six young ones, the size of horse-beans, three in each horn of the uterus. The total length of this specimen was 6·15 inches, of which the head was 1·3, and the tail 1·25 inches. I subsequently got several more, mostly half grown, by watching near their holes with a gun."

Of the types procured by Mr. Theobald, one, in spirit, was presented to the Asiatic Society's Museum. This, after some search, has been refound by Mr. Theobald himself, and, although the label had been lost, satisfactorily and unmistakably identified. The specimen, although considerably smaller than the female mentioned above, proves to be an adult male. It is precisely similar to the specimens brought by Dr. Stoliczka from the Pankong lake.

Dr. Stolickza, too, in his account (J. A. S. B., 1865, xxxiv, p. 110,) of the *Lagomys*, which he identified with *L. curzoniæ*,[2] mentions this species as inhabiting the borders of the Tso-moriri with the *Lagomys* and an *Arctomys*[3]. He says that the *Arvicola* (*Phaiomys*) never frequents a great elevation above the bottom of the valleys, and is especially numerous in the neighbourhood of streams. He adds that it is found in Spiti and Lahoul, and even in Kulu.

[1] Tso, lake in Tibetan, sometimes written Cho, but I believe incorrectly.

[2] *L. ladacensis*. q. v.

[3] Probably *A. caudatus*, Jacquemont, q. v.

Proceeding now to the question of nomenclature, it may be as well, before making any remarks upon it, to quote Mr. Blyth's description *l. c.* in full. It runs as follows:—

Phaiomys, nobis, *n. g.* Similar to *Arvicola*, but more robust, with a well-developed thumb and nail to the forefoot; tail shortish and densely clad with short adpressed hairs. Upper rodent tusks inconspicuously grooved.

Ph. leucurus, nobis, *n. s.* Length of a female containing six *fœtus* 6⅛ inch, of which tail ¼ inch;[1] of a smaller specimen sent 4½ inches, of which tail 1¼ inch, of hind-foot claws (*sic*, probably a misprint for *hind foot with claws*) ⅞ inch. Fur dense, very soft, and fine; the surface fine greyish-brown on the upper parts; on the lower parts, feet and tail white, a little sullied; basal two-thirds or more of the upper fur dark slaty. "Ears rounded, of medium size, rather appressed."

It is, I think, evident from the above, that Mr. Blyth based the distinction between his genus *Phaiomys* and *Arvicola* chiefly on the presence in the former of a claw to the rudimentary thumb; neither the general form nor the tail affording any distinctive character of importance. This claw is absent in some species of the genus *Arvicola*, but present, I think, in a still larger number. It is present, for instance, in the common water rat, *A. amphibius;* Pallas mentions its existence in a more or less rudimentary form in *A. socialis*,[2] *A. œconomus*,[3] *A. gregalis*,[4] *A. rutilus*,[5] and *A. saxatilis*,[6] it being very minute in *A. gregalis* and *A rutilus*; whilst it is described as absent in *A. alliarius*.[7] Its presence has, moreover, been noted in some Asiatic forms described in more recent works, as *A. amurensis*,[8] *A. maximowiczii*,[9] *A. brandti*,[10] *A. obscurus*,[11] and *A. mandarinus*,[12] and I note, in the first place, that these species belong to very different sections of the genus as distinguished by the characters of the teeth; *A. saxatilis* and *A. brandti*, for instance, having, according to Milne-Edwards,[13] one prism on the inner side of the last upper molars, in addition to those found in *A. obscurus*, *A. mandarinus*,[14] and many other species; secondly, that careful and well-informed observers, with a wide knowledge of the genus, have not considered the presence or absence of a claw on the thumb a character of sufficient importance to justify its being used for generic distinction; and lastly, that there is an almost complete gradation from species wanting the claw to those which have it well developed, through forms in which it is more or less rudimentary.

But if *Phaiomys leucurus* be relegated to the genus *Arvicola*, the name must be changed, as there is an *A. leucurus* of Gerbe,[15] described from the Alps of Provence in

[1] Evidently a misprint for 1¼. Theobald gives as the measurement of the total length 6·15 inches, of which the head was 1·30, and the tail 1·25.

[2] Glires, p. 220.

[3] Ib., p. 234.

[4] Ib., p. 244.

[5] Ib., p. 248.

[6] Ib., p. 256.

[7] Ib., p. 253.

[8] Schrenk, Reisen und Forschungen im Amur-Lande, i, p. 129.

[9] Ib., p. 140.

[10] Radde, Reisen im Suden von Ost-Siberien, i, p. 199, Pl. VII, fig. 3.

[11] Eversman *apud* Middendorf, Sib. Reise, p. 109, Pl. XI, figs. 1—5. Although the presence of the claw is not mentioned in the description, it is clearly shewn in figure 3 representing the skeleton. The original description of the species is in the Addenda ad cel. Pallasii Zoographiam, &c., fasc. 2,—a very rare book.

[12] A. Milne-Edwards, Rech. Mam. p. 129, Pl. XII, XIII.

[13] Rech. Mam., p. 131. I have unfortunately been unable to consult a paper by Blasius on *Arvicola*, in the Münch. Gelerht. Anz., 1853, xxxvii, p. 105, as the volume is deficient in the only set in Calcutta, that belonging to the Asiatic Society.

[14] This character, I may note, appears quite as important as the presence of an additional ridge on the anterior upper molars, on the strength of which Hodgson's genus *Neodon* has been established (Jerdon, Mammals, p. 216). The genus was originally proposed in the Annals and Magazine of Natural History for 1849, Ser. 2, Vol. III, p, 203, but it was not described, and it was merely said to differ from *Arvicola* in the character of the molars. The genus *Neodon* appears founded on characters of only specific importance, and the type, *N. sikkimensis*, is, I think, a true *Arvicola*.

[15] Rev. de Zool., iv, p. 260.

1852. Aeeording to Blasius[1] *A. leucurus*, Gerbe, is identieal with *A. nivalis*, Martins, (*Hypudæus alpinus*, Wagner), so that those naturalists who do not eonsider that a name need be altered if the same speeifie term, given previously, does not stand, may retain Blyth's name for the present speeies. At the same time it is objectionable, for this vole cannot rightly be said to have a white tail.

There is another speeies recently deseribed by Severtzoff as *A. leucura*[2] from Western Turkestan; the name of this form, if really distinet, will also, I think, require alteration.

In general colouration and eharacters, length of tail and form of teeth, *A. blythi* is very near *A. mandarinus*[3] from Chinese Mongolia; but differs in its mueh larger ears, in the tail not being so dark above, and slightly in the shape of the teeth. In *A. mandarinus* the posterior portion of the last upper molar is shewn to be less developed, and the hindmost inner salient angle mueh blunter; the anterior inner angle of the first tooth in the lower jaw is also less developed, and all the prisms of that tooth broader and thicker.

The solitary skin referred to *Arvicola roylei* in the Asiatie Society's Museum has been mislaid, and its identifieation, if it eame from Pind Dadun Khan,[4] is very doubtful; but the speeies was deseribed originally[5] as rufous-grey above and grey beneath; and Jerdon[6] calls it ashy-brown above, pale brownish-ashy below. The second and third lower molars are said to have three equal folds on eaeh side;[7] whilst the hindmost upper molar is deseribed as elongate, narrow, with three slight folds on each side and an elongate lobe behind. I have an *Arvicola* from Murree agreeing with the deseription of *A. roylei* in external eharaeters; but the posterior upper molar has but two folds on eaeh side. As, however, there may be an error in the original deseription, I am not sure that the speeies is really distinet. A speeies of *Arvicola* has been deseribed by A. Milne-Edwards from Eastern Tibet under the name of *A. melanogaster*.[8] Another speeies is *Neodon sikkimensis*, the genus *Neodon*, as was pointed out in a note to a preeeding page, being founded upon eharaeters of no generie value. This speeies, though attributed to Hodgson, was never deseribed by him; the genus was announeed, but without any definite eharaeters being pointed out, by Horsfield,[9] and it appears to have been first definitely deseribed in Jerdon's Mammals of India.[10]

30. Arvicola stoliczkanus. Pl. VIII, Fig 1; Pl. X b, Fig 2.

W. Blanf., J. A. S. B., 1875, xliv, Pt. 2, p. 107.

A. supra læte fusco-rufescens, sive sordide ferrugineus, subtus albus; vellere molli, longiusculo, ad basin schistaceo, palmis tetradactylis, plantis pentadactylis nudis brevibus, tarsis subtus pilis indutis, auriculis parvis e vellere haud emergentibus, rotundatis, caudâ

[1] Archiv. f. Naturgesch. 1856, Pt. 1, p. 261.
[2] Turk. Jev. p. 82; Ann. Mag. Nat. Hist., Ser. 4, Vol. xviii, p. 52.
[3] A. Milne-Edwards, Recherches Mamm., i., p. 129, Pl. XII, XIII.
[4] Blyth, Cat. Mam. Mus. As. Soc. p. 125.
[5] Gray, Ann. Mag. Nat. Hist., 1842, x, p. 265.
[6] Mam., p. 216.
[7] Gray, l. c.
[8] Rech. Mamm., p. 284, Pl. XLIV, XLVI a.
[9] Ann. Mag. Nat. Hist., Ser. 2, iii, p. 203.
[10] p. 216.

quintam partem totius longitudinis subæquante, pilis fulvescenti-albidis setosis instructâ; dente molario maxillari ultimo angusto, intus angulis duobus fortioribus antice, nullis postice, extus quatuor parvulis, duobus antice, ceteris postice, spatio interveniente, munito. Long. a rostro ad basin caudæ (in corio dessicato) 4, caudæ 1, tarsi 0·7 poll.

1, Nubra valley, N. of Ladák; 2. Aktágh, on the upper waters of the Yárkand river.

General colour bright ferruginous, brown above, pure white beneath. Fur soft, rather woolly, 0·5 to 0·6 inch long on the middle of the back, the basal portion throughout both head and body being dark leaden-grey: this is the case on the back for about three quarters of the length of the hairs; the remaining quarter is rufous-white, tipped with darker rufous, whilst numerous rather longer hairs are dark rufous-brown at the ends. Rather a sharp line divides the rufous of the back from the white belly. Upper part of the head the same colour as the back. Upper whiskers dark-brown; lower, including the longest, white. Ears small, rounded, hairy, completely concealed by the fur, with rather short bright rufous hair near the margin inside, and covered outside with longer and paler hair. Feet small, the thumb of the fore-foot quite rudimentary and clawless; remaining claws long, compressed, sharply pointed, but much concealed by the long white hairs, which cover the upper part of the foot; soles naked; tarsus hairy below, a few hairs between the pads of the toes. Tail short, apparently about a quarter the length of the body and head together, covered with stiff fulvescent white hair, which extends about half an inch beyond the end. The dimensions are taken from dried skins, and are consequently only approximations; length of head and body 4 inches; tail with terminal hairs 1½, without hairs 1; tarsus and hind-foot to end of claws 0·7; ear from orifice 0·35; breadth the same.

The following are the dimensions of a broken skull extracted from the skin:—

	Metre.	Inches.
Length, about	·029	1·15
Do. of nasal bones	·0095	0·38
Breadth of do. behind	·002	0·08
Do. do. in front	·003	0·12
Width between orbits	·0035	0·13
Length of molars of upper jaw	·007	0·27
Distance from do. to incisors	·0085	0·34
Length of lower jaw from condyle to symphysis	·018	0·73

The nasal bones have a slightly concave outer margin, and their posterior termination is not rounded. The incisors are deep yellow in front; the upper pair having a very shallow groove down the centre. The anterior molar in the upper jaw consists of five prismatic lobes, and has three salient angles on each side; the second consists of four prisms, and has three angles outside, two inside; the third is peculiarly formed: it has two strong salient angles on the inside, and two very weak outside in the anterior portion, which is followed by an elongate process having two[1] slight projecting angles on the outside only, so that altogether this tooth has two strong salient angles inside, and four—all much weaker—outside; the front inner pair separated from the hinder pair by a deep groove.

In the lower jaw the anterior molar is much the largest, and the hinder small; the first has five projections on each side,—the anterior pair very small and blunt; the second has three

[1] The hindmost is not shewn on the figure, Pl. X b, fig. 2, as it is scarcely seen on the crown of the tooth; it is at the inner hinder extremity, or at the left hand lower termination of the figure, and is blunter than the angle just in front of it.

sharp angles on each side; the third also has three on each side, but those on the outer side are weaker.

In colouration this species resembles *A. russatus*, Radde,[1] but that is smaller, with a proportionally longer tail, which is rusty red above, pale ochraceous below, and the teeth are very different, resembling those of *A. mandarinus*.[2] *A. leucura*, Severtzoff, from Western Turkestan, is very differently coloured; it is described as being ashy; the name must, as already observed, be changed, as it is preoccupied.

I find no details as to *Arvicola stoliczkanus* in Stoliczka's notes. He merely mentions finding a new *Phaiomys*,—evidently this species,—at Aktágh. The specimen from the Nubra valley was collected by Dr. Bellew.

31. Cricetus (cricetulus) phæus, *var.*

Mus phæus, Pallas, Glires, pp. 74, 261, Pl. XVa.
Cricetus phæus, Pall., Zoog. Ros. As., i, p. 163.

1, Sarikol; 2, 3, Panjah, Wakhán,—all skins.

Although the specimens brought differ in some respects from those from Persia,[3] still I think the differences are not much greater than those of Persian specimens between themselves. The Yárkand and Pámir skins of this hamster have smaller ears than those collected in Persia, and rather longer fur. But the most important distinction is, that in the former the molar teeth are larger; at the same time the form of the teeth is the same.

The following dimensions are taken from the label of the specimen from Panjah (1). For comparison I give the dimensions in inches of a Persian male, (2) taken on the body like those of the Wakhán animal, and (3) Pallas's original measurements[4] of a specimen probably from near Astrakhan :—

	1 ♂	2 ♂	3
Length of head and body	3·7	4	3·4
Do. of head alone	1·08	1·2	1·17
Do. of tail	0·8	1·25	0·75
Do. of ear	0·68	0·76	0·5
Do. of fore-foot with claws	0·38	0·4	0·4
Do. of hind-foot do.	0·68	0·7	0·6

The length of the ears in the Panjah specimen is intermediate between the Persian and Russian measurements. From the label of this specimen I take the following additional details :—snout to eye 0·48, snout to ear 0·9, width of fore-foot 0·2, of hind-foot the same, length of hair on the back 0·37, of the longer hairs tipped black 0·7, width of head at base of ears 0·55. Ears rounded, soles of feet white, snout flesh-coloured, iris brown.

The colour varies from pure ashy grey to grey with an isabelline tinge, but the same takes place in Persian specimens.

Since the above was written, both this and the next species have been discovered in Gilgit by Captain Biddulph.

[1] Reise, i, p. 186, Pl. VII, fig. 2.
[2] Rech. Mam., i, p. 131.
[3] Eastern Persia, ii, p. 58.
[4] Glires, p. 263.

32. C. (Cricetulus) fulvus. Pl. IX, fig. 1; Pl. X b, fig. 3.

W. Blanf., J. A. S. B., 1875, xliv, Pt. 2, p. 108.

C. peraffinis Criceto phæo, *sed major atque magis fulvus, arenaceo-fulvus vix cinereus. Long. corporis capitisque 4·5, caudæ 1·4, auris 0·75, tarsi 0·7 poll.*

1, Young, north of Sánju pass; 2, Káshghar; 3, Yangihissar; 4, 5, Yárkand; 6, 7, Sarikol; 8, Panjah, Wakhán. All skins, except No. 6, which is in spirit.

Colour above, light sandy brown to sandy grey, no band down the back; lower parts, feet and tail white. Fur very soft, fully half an inch long in the middle of the back in the specimens from Panjah and Sarikol, but only about 0·35 long in those from Yárkand, Yangihissar and Káshghar. The basal portion, except on the abdomen, blackish slaty; this is the colour of three-quarters of the length on the back. The tips are of two kinds, the majority are pale sandy isabelline; but a very large number of rather longer hairs, black in colour, scarcely coarser than the rest, are scattered throughout the fur. These black tips are also found on the head above. On the sides they are rather less numerous than on the back, and the colour is rather more rufous. There is a distinct line separating the dark dorsal region from the white abdomen; the white includes the breast, chin, and the lower parts of the cheeks, with the sides of the head. Whiskers very numerous, the upper dark brown, the lower white, the longest about $1\frac{1}{2}$ inches in length, muzzle blunt; ears moderate, ovate, very thin, nearly naked outside near the base, thinly clad above, with whitish hairs both inside and outside, hairs of the tail short and rather stiff.

The tubercles beneath the fore-foot are 5 in number, besides the hallucar wart representing the thumb, which is smaller than the others; three are in front arranged in a triangle, one in advance of the two others, and the two hindmost in line behind the latter pair, the hallucar tubercle being outside and intermediate in position; on the hind-foot are also 6 tubercles, 2 on the outer side, 3 on the inner and one terminal; the others are not opposite to each other, but alternate; all are about the same size.

The following dimensions are (1) from the label of the Káshghar specimen, (2) from the Sarikol specimen in spirit:—

	1 Inches.	2 Inches.
Length of head and body	4·45	4·4
Do. of head alone	1·35	1·2
Do. of tail	1·45	1·2
Do. from snout to ear	1·08	...
Do. do. to eye	0·6	...
Do. from eye to ear	0·4	...
Length of ear from front base to tip	0·75	0·55
Do. measured behind	0·6	...
Do. from orifice	...	0·6
Greatest width of ear	0·6	0·4
Length of fore-foot and claws	0·42	0·38
Do. hind-foot and do.	0·7	0·67

"Claws white, soles flesh coloured, muzzle the same, iris brown."

The following are the dimensions of a skull :—

	Metre.	Inches.
Total length	·030	1·17
Breadth across zygomatic arches	·016	0·64
Do. between orbits	·004	0·16
Length of nasal bones	·012	0·48
Breadth of do. in front	·004	0·16
Length of upper molars taken together	·0045	0·18
Distance from incisors to upper molars	·0085	0·34
Length of lower jaw from condyle to symphysis	·0155	0·6

This species is little more than a large brownish form of *C. phœus*, but it is so much larger that it ought, I think, to be distinguished. I obtained one specimen in Northern Persia which agreed in size very fairly with *C. fulvus*.[1] There appears to be a regular gradation of closely allied forms of grey hamsters, commencing with the little *C. arenarius*[2] and ending with the large *C. isabellinus*,[3] which has the head and body 6 inches long without the tail.

The only difference I can see between the specimens from Yárkand and Káshghar, and those from the Pámir, is the much longer fur which the latter possess, in consequence, probably, of the colder climate they inhabit. As already noticed under *C. phœus*, *C. fulvus* has been found again associated with its smaller relative, by Captain Biddulph, in Gilgit, south of the dividing range between the upper Oxus and the Indus, and within the territories of Kashmir.

From *C.* (*Cricetulus*) *griseus*[4] the present form is distinguished by its larger size and longer tail, by its rather darker colouration (judging at least by the figure of *C. griseus*) and the absence of any dorsal band, and by the very different disposition of the tubercles on the soles of the feet.

A species recently described by Severtzoff under the name of *Cricetus murinus* [5] is said to resemble in appearance *Arvicola arvalis*, being dark greyish-brown above, ashy below; the length is 5 inches, of which the tail is $1\frac{1}{2}$. This species is found in the Irtish and Ishim rivers in South-Western Siberia. The species recorded by Severtzoff from Western Turkestan are *C. songarus*, *C. acredula*, and *C. eversmanni*. *C. phœus* may very possibly occur also.

33. Nesokia barclayana. Pl. X a, fig. 1.
(or *N. blythiana*, var.)

Mus (*Nesokia*) *barclayanus*, Anderson, J. A. S. B., 1878, vol. xlvii, Pt. 2, p. 229.
Nesokia indica, W. Blanf., J. A. S. B., 1875, xliv, Pt. 2, p. 108.

1–5, Srinagar, Kashmir.

When examining the rodents of Dr. Stoliczka's collection, I found it very difficult to determine the species of *Nesokia* for want of examples. I have since obtained many specimens from various parts of India, and Dr. Anderson has recently examined the large collection that has accumulated in the course of the last few years in the Indian Museum, with the

[1] Eastern Persia, ii, p. 58.
[2] Pallas, Glires, p. 265.
[3] De Filippi, Viaggio in Persia, p. 344.
[4] A. Milne-Edwards, Rech. Mamm., i, p. 133, Pl. XII, XIII.
[5] Severtzoff, Turk. Jev., p. 82: Ann. Mag. Nat. Hist., July 1876, Ser. 4, xviii, p. 54.

result of showing that the number of species is considerably larger than it was supposed to be by Blyth[1] and Jerdon.[2] The former considered the various animals described as *Mus indicus* by Geoffroy St. Hilaire,[3] *Mus* (*Neotoma*) *providens* by W. Elliot,[4] *Mus kok*,[5] *Mus hardwickei*, and *Nesokia hardwickei*,[6] by Dr. Gray, *Mus huttoni*,[7] by himself, and some other described forms, all to belong to one species, which he called *Nesokia indica*, and to which he referred the *Arvicola indica* of Gray and Hardwicke.[8] He was also disposed to believe that some of the numerous names given by Mr. Hodgson to the various species of rats and mice inhabiting Nepal would be found to belong to the same animal. In some notes subsequently published,[9] after examining the types in the British Museum, Mr. Blyth recognised the distinctness of *N. hardwickei*.

Dr. Jerdon separated the "short-tailed mole rat" of the North-West Provinces, an animal which he identified with Gray's *Nesokia hardwickei*, from the longer tailed *Nesokia* of Bengal and Southern India, and indicated the existence of at least one additional species. I subsequently[10] gave reasons for distinguishing *N. huttoni* of Baluchistan and Kándahár from *N. hardwickei*. I may add that with a much increased knowledge of *N. hardwickei* I doubt whether the differences I then mentioned are constant.

It should be added that Prof. Peters of Berlin, in 1860, gave an excellent description of *Nesokia hardwickei*, with figures of the skull, under the supposition that the genus and species were undescribed, and he called it *Spalacomys indica*.[11]

Dr. Anderson, in his recent paper, considers *Nesokia* a subgenus of *Mus*, and refers to it, besides the mole-rats of Jerdon, the bandicoot, *Mus bandicota v. giganteus*, and an allied species, *M. elliotanus*, previously unnamed, unless it prove, as is not improbable, to be *M. nemorivagus*[12] of Hodgson or the true *M. setifer*[13] of Horsfield. The species referred to the subgenus are classed by Dr. Anderson in three sections,—one, the typical group containing the original type of the genus, *N. hardwickei*, and its allies *N. huttoni* and *N. scullyi*; a second section comprising the *N. indica* of Blyth and Jerdon, which Dr. Anderson renames *N. blythiana*, and from which he separates *N. providens* of Elliot, and another species which he calls *N. barclayana*; and the bandicoot group, *N. giganteus* and *N. elliotanus*. He shews that the *Mus indicus* of Geoffroy St. Hilaire was not a *Nesokia*, and he considers that *Arvicola indica* was the same as *Mus hardwickei*, consequently the *Nesokia indica* of Blyth and Jerdon requires another specific name. He refers the Kashmir species to *N. barclayana*.

The differences between the two more important sections of the genus or subgenus are the following: the bandicoots, forming the third section, do not extend into the countries with which the present work is concerned, and their title to be classed in the genus *Nesokia* is open to some doubt, they being, in fact, intermediate in characters between *Nesokia* and *Mus*. In

[1] J. A. S. B., 1863, xxxii, pp. 328—333.
[2] Mam. Ind., pp. 187, 190.
[3] Desmarest, Mam., p. 299.
[4] Mad. Jour. Lit. Sci., x, p. 209.
[5] Charlesworth's Mag. Nat. Hist., 1837, Ser. 1, i, p. 585.
[6] Ann. Mag. Nat. Hist., 1842, Ser. 1, x, p. 265.
[7] J. A. S. B., 1846, xv, p. 139.
[8] Illustr. Ind. Zool., Vol. i, Pl. Xi.
[9] J. A. S. B., 1865, xxxiv, Pt. 2, p. 193.
[10] Eastern Persia, ii, p. 59.
[11] Abhandl. K. Akad. Wiss. Berlin, 1860, p. 143, Pl. ii, fig. 1.
[12] Ann. Mag. Nat. Hist., 1845, Ser. 1, xv, p. 266.
[13] Zool. Researches, Pl.

the typical section of true *Nesokia*, the skull (Pl. X a, fig. 2, 2a, &c,) is very much broader and shorter than in *Mus*, and the head consequently has more the form of *Arvicola*, the brain case is especially short and broad, the muzzle short, the anterior palatine foramina comparatively short and narrow, both molars and incisors are very broad and the worn surface of the former composed of transverse laminæ. The hinder margin of the palatine bones is much thickened. The tail is comparatively short (except in *N. scullyi*), and the claws are flattened and peculiarly adapted for digging. In all these characters the second section forms a transition between typical *Nesokia* and the bandicoots, so that there is a complete series of gradations from an extreme form like *N. scullyi* to a typical rat like *Mus decumanus*. In *N. blythiana* and its allies (Pl. X a, fig. 1, 1a, &c.,) the molars are more distinctly transversely laminated, and both they and the incisors are broader than in *Mus*, although the teeth are inferior in all these characters to those of the typical group of *Nesokia*; the skull is not so broad as in the latter, nor are the anterior palatine foramina so short, but still the skull is much broader and shorter, and the anterior palatine foramina much narrower than in true *Mus*. The tail in this section of *Nesokia* is but little shorter than the head and body, and the claws are more compressed than in *N. hardwickei* and its allies.

I quite agree with Dr. Anderson that if, as he appears to have ascertained satisfactorily, the *Mus indicus* of Geoffroy is a typical *Mus*, the name *indica* is inapplicable to the common *Nesokia* of Bengal, for, as he has also shewn, the *Arvicola indica* of Gray and Hardwicke's "Illustrations of Indian Zoology" agrees better with *Nesokia hardwickei*, with which it was identified by Gray. Dr. Anderson also considers that the *Arvicola bengalensis* of the same publication represents the long-tailed Bengal *Nesokia*. If the fact that these two figures represent the two species of *Nesokia* can be satisfactorily established, *N. hardwickei* must, I think, stand as *N. indica*, and this will be inconvenient, because the name has been generally applied, for at least 16 years, to a distinct species. The long-tailed species, *N. indica* of Blyth and Jerdon, *N. blythiana* of Anderson, would in the same way retain the oldest name of *N. bengalensis*. But the figures in Gray and Hardwicke's "Illustrations" are by no means sufficiently good to render it at all certain what species is represented. There is still, however, much probability that one or more of the names given by Mr. Hodgson, *Mus hydrophilus*, *M. pyctorhis*, *M. macropus*, or *M. plurimammis*, may apply to the Bengal *Nesokia*, and if so, such name will take precedence of *N. blythiana*.

I am also inclined to think Dr. Anderson right in separating *N. providens*, the South Indian form, from his *N. blythiana*. As regards the distinction of *N. barclayana*, however, I am disposed to suspend my judgment. Dr. Anderson has examined the two animals alive and has compared a much larger series than I have, so I adopt his nomenclature, but I cannot help doubting whether *N. barclayana* is more than a local variety of *N. blythiana*, differing slightly in colour, and being of a rather more yellowish-brown tint, owing to its inhabiting a drier climate. The differences by which the two species are distinguished besides colour are small, and consist of a shorter muzzle, larger, longer and more arched skull, and relatively broader nasals in *N. barclayana*. The last character is noted as variable and the difference in size is not sufficient for specific distinction, even if it be constant; but the skull of *N. barclayana* does appear a little more arched. My impression is that the latter is merely a variety; but I may be mistaken.

The Srinagar specimens collected by Dr. Stoliczka have very harsh, coarse fur, yellowish-brown on the back and yellowish-grey below. I think, however, these skins are slightly stained, and that when fresh the yellow tinge was not so marked. The fur on the back

consists in almost equal proportions of fine short underfur, and long coarse grooved piles, some dull yellow, the others, including nearly all the longest, very dark-brown. These piles are especially long on the hinder part of the back, where some are as much as 2 inches in length. All the terminal portion of the longest piles is rounded, but they are more or less flattened beyond the extremities of the short underfur. The feet are well clad above with short coarse hair, the tail has short bristles between the scales. The ears appear to have been thinly clad.

The skull differs very little from those of some Calcutta specimens of *N. blythiana*. The long anterior palatine foramina are still narrower, and more slit-like posteriorly, the palate between the molars is narrower and the upper surface of the skull rather more arched, but the differences are very small. The fur is much longer than in the Bengal rat, but this may merely be the result of inhabiting a colder climate.

It is impossible to give any trustworthy dimensions from dried skins; the tail appears unusually short, but the vertebræ are not preserved. The size is apparently the same as that of *Nesokia blythiana* and *N. barclayana*. The skull agrees best with the latter, and to this species the Kashmir form is referred by Dr. Anderson. The following are dimensions of the adult skull figured in Pl. X a. The sex is not marked on the specimen, but I feel very little doubt, after examining the skin, that the animal was a male.

	Metre.	Inches.
Length from occipital plane to end of premaxillaries	·0465	1·83
Breadth across zygomatic arches	·027	1·08
Do. of brain pan behind posterior termination of zygomata	·017	0·67
Do. of frontal region where narrowest between orbits	·006	0·25
Do. of muzzle	·0075	0·30
Length of suture between nasals	·0135	0·53
Height of skull above second molar (teeth not measured)	·016	0·63
Length of bony palate behind incisor teeth to opening of posterior nares	·025	1·00
Length of anterior palatine foramina	·0105	0·43
Distance from anterior upper molar to incisor	·015	0·60
Length of row of upper molars at insertion in jaw	·009	0·38
Breadth of palate between anterior upper molars	·0045	0·18
Length of mandible from condyle to symphysis	·031	1·25
Height to coronoid process	·018	0·72
Length of row of lower molars	·008	0·33

According to Dr. Anderson, *Nesokia blythiana* is chiefly found in Bengal, although some specimens are recorded from the North-West Provinces. *N. barclayana* is found in the North-West Provinces, Northern Central India and Sind, besides Kashmir. So far as I am aware, this form of *Nesokia* is only found in the damper parts of Sind close to the coast.

The specimens brought from Srinagar comprise three adults marked as obtained in houses, and two young specimens procured from holes in fields. *Nesokia blythiana* abounds in gardens in Bengal and is frequently found in houses, although it is essentially a burrower, living in holes in the ground.

34. Nesokia scullyi. Pl. VIII a; Pl. X a, fig. 2.

Wood-Mason, P. A. S. B., 1876, p. 80.
Mughi, Turki.

General colouration above, light rufescent brown or fawn colour; below, dirty white. Fur very fine and silky, blackish-grey at the base, and for two-thirds of its length above, the

basal portion darker than the terminal, the last third of the longer hairs only being light fawn colour. On the lower parts the hairs are grey with a pinkish tinge at the base. The pale tipped hairs in the middle of the back are about $\frac{8}{10}$ inch long; a few still longer fine piles being scattered through the fur on the hinder part of the back. The face is earthy-brown; vibrissæ numerous, moderately coarse, black or blackish-brown, except near the tips, where most are white, the longest extend to the ear, and are about 1·8 inch long; some coarse silvery-white hairs along the upper lip. Ears short, rounded, scarcely appearing beyond the fur, and almost naked. Feet flesh-coloured, large, very sparsely clad with short scattered white hairs above, naked below. Claws flesh-coloured. Tail shorter than body and head, and absolutely devoid of hairs except above near the base, where there are a very few scattered short fine hairs, none near the tip; the surface scaly; the scales round and arranged in indistinct rings, about 40 to the inch.

	Inches.
Length from snout to insertion of tail	6·6
Do. of tail	5·2
Do. of ears from orifice	0·6
Do. do. from head outside	0·5
Breadth of ears	0·45
Length of hind-foot without claws	1·55
Do. of fore-foot do.	0·8

The first two measurements were taken by Dr. Scully on the body; the others are from the dried skin.

The following are measurements of the skull, which is nearly perfect:—

	Metre.	Inches.
Length from occipital plane to end of premaxillaries	·046	1·83
Breadth across zygomatic arches	·028	1·12
Do. of brain pan behind posterior termination of zygomata	·017	0·68
Do. of frontal region where narrowest between orbits	·007	0·3
Do. of muzzle	·010	0·4
Length of suture between nasals	·014	0·55
Height of skull above second molar (teeth not measured)	·015	0·6
Length of bony palate behind incisor teeth to opening of posterior nares	·026	1·03
Length of anterior palatine foramina	·007	0·27
Distance from anterior upper molar to incisor	·016	0·6
Length of row of upper molars at insertion in jaw	·011	0·45
Breadth of palate between anterior upper molars	·003	0·13
Length of mandible from condyle to symphysis	·033	1·32
Height to coronoid process	·020	0·78
Length of row of lower molars	·011	0·43

As pointed out by the describer, the species is distinguished from all other forms of the genus *Nesokia* by the long silky hair, naked tail and large feet, and by the great proportional size and breadth of the skull, mandible and teeth; on the whole, it approaches nearest to *N. huttoni*, which is but doubtfully distinct from *N. hardwickei*.

This is the second instance in which a species of *Nesokia (Spalacomys)* has been found within the boundary of the Palæarctic region. *N. huttoni* has been obtained in Baluchistan and Southern Afghanistan.

No specimen of *N. scullyi* was obtained by Dr. Stoliczka. The type, a dried skin of a male, now in the Indian Museum, was collected by Dr. Scully on June 11th, 1875, at Sánju, close to the base of the Kuenlun, south-east of Yárkand.

35. Mus sublimis, sp. nov.

Mus crassipes ? W. Blanf., J. A. S. B., 1875, xliv, Pt. 2, p. 108.

Mus subfuscus, subtus albidus, vellere molli, longiusculo, basin versus schistaceo, auriculis pilosis, caudâ setosâ corporem cum capite longitudine excedente, pedibus longiusculis. Long. a rostro ad basin caudæ (exempli in spiritu vini conservati) 2·6, caudæ 3·05, auris 0·5, plantæ 0·83 poll.

1, ♀, Tankse, west of Pankong Lake, Ladák, 13,000 feet.

Colour above hair brown, below whitish, the colours passing into each other; fur soft and rather long, about 0·35 inch on the middle of the back; all, except the tips, both above and below, dark slaty-grey, the terminal portions of the shorter hairs on the back being light-brown, that of the longer hairs, which are about 0·45 inch long and very numerous, dark-brown. Face much the same colour as the back, also with long blackish hairs scattered over it, the upper whiskers black; the lower, some of which are longer than the head, white. Ears oval, clad with rather scattered light rufous-brown hairs near the margin inside, and on the anterior portion of the outer surface, on the posterior outer surface the short marginal hairs are whitish, the hairs on the portion of the outer surface near the head are long and pale coloured. Feet thinly clad with short light-brown hairs, tail with short bristly hairs, which are dusky-brown above, whitish below. The colour of the type has become paler and more rufous since the above description was written in 1875.

The tail, which is fine and tapers gradually and regularly from the base to the tip, exceeds the head and body in length. The hind feet are rather long and narrow, the tubercles beneath them are thus distributed: the distal pair, as usual, close together at the base of the three middle toes, the outer tubercle of the next pair considerably farther from the heel than the inner, and the outer tubercle of the proximal pair nearer to the inner of the second pair than to the proximal inner tubercle. The fourth toe is distinctly shorter than the second. Beneath the fore-foot the two proximal tubercles almost form an oblique line with the hallux, but are rather nearer the wrist; the second digit is shorter than the fourth. All the claws are pale coloured and all compressed except that of the rudimentary hallux.

The following dimensions, being taken from a specimen in spirit, are rather less than those of the animal when alive:—

	Inches.
Length of head and body from nose to insertion of tail	2·6
Do. of tail	3·05
Do. of head	0·95
Do. of ear from orifice	0·5
Breadth of do. laid flat	0·4
Length of fore-foot *(palma)*	0·4
Do. of tarsus and hind-foot	0·83

The skull differs from those of *M. musculus*, *M. sylvaticus*, *M. bactrianus*, and most other species in having the malar bone distinctly concave on its outer surface, so that the

zygomatic arches when viewed from above or below are curved inwards, and the breadth across them is greatest at the origin of the zygomatic process of the squamosal, and considerably less across the malars. The upper surface of the skull is moderately convex, the frontal and nasal portion almost straight. The interparietal extends nearly the whole width of the skull and is pointed at both extremities, its greatest length (antero-posterior diameter) is more than one-third its breadth. The anterior palatine foramina are large and nearly of equal breadth throughout, and they terminate posteriorly behind the line joining the anterior extremities of the molar teeth. The posterior termination of the palate is regularly concave, the pterygoids short, thickened, nearly parallel, rather far apart, and not divergent posteriorly. The teeth present no peculiarities worthy of notice. The following are dimensions of the skull:—

	Metre.	Inch.
Length from occipital plane to end of nasal bones	·023	·92
Breadth across posterior termination of zygomata	·012	·48
Do. of frontal region between orbits	·0045	·18
Do. of interparietal	·008	·31
Do. of muzzle in front of infra-orbital foramen	·004	·17
Length of suture between nasals	·008	·32
Greatest height of skull	·009	·35
Length of anterior palatine foramina	·005	·20
Do. of bony palate from incisors to opening of posterior nares	·0095	·38
Do. of pterygoid bones	·004	·16
Do. of row of upper molars	·004	·16
Breadth of palate between anterior molars	·003	·11
Length of mandible from condyle to symphysis	·0125	·5
Height of do. to coronoid process	·006	·25

I am unable to identify this mouse with any known species. In the preliminary list of Dr. Stoliczka's collections I referred it, with great doubt, to a species very imperfectly described by Blyth[1] under the name of *M. crassipes*. The description was as follows:—

Like the preceding (*M. homourus*), but with the tail rather longer than the head and body; length $2\frac{3}{4}$, tail $3\frac{1}{4}$, hind foot $\frac{3}{4}$ inch; the feet particularly large and, like the tail, well furnished with coarse, short setæ. From Masuri.

Mus homourus[2] is said to be coloured like *M. decumanus*, but purer, rufescent brown above and rufescent white below.

The dimensions of *M. crassipes* correspond fairly with those of the mouse from Western Tibet, but the main structural character of the former, the large feet, are wanting in the latter, and as I have received from Dr. Scully specimens of a large footed mouse obtained in Nepal, agreeing better with Blyth's description, I consider the Tibetan species must be distinct. There is no specimen of *M. crassipes* in the Indian Museum, nor, so far as I am aware, has the type been preserved.

I regret that no figure of this species has been prepared. The peculiarities of the skull may be easily understood by referring to the figure of that of *M. pachycercus*, Pl. X b, fig. 4, 4*a*, 4*b*. In *M. sublimis* the zygomatic arch viewed from above or below is concave posteriorly, instead of straight, and the opening of the posterior nares is far broader, the posterior margin of the palatines evenly rounded, and the pterygoids subparallel instead of divergent, and somewhat thickened. The form of the pterygoids is peculiar and characteristic.

[1] J. A. S. B., 1859, xxviii, p. 295, note. See also Jerdon, Mam. Ind., p. 204.
[2] Hodgson, Ann. and Mag. Nat. Hist., 1845, xv, p. 268.

36. Mus pachycercus. Pl. IX, Fig 2; Pl. X b, Fig 4.

W. Blanf., J. A. S. B., 1875, xliv, Part 2, p. 108.

Mus *affinis* M. bactriano, *sed minor, caudâ breviore, crassiusculâ, setosâ, supra fusco-fulvus, subtus albidus, auriculis ovalibus majusculis pilosis. Long. (exempli in spiritu vini conservati) a rostro ad basin caudæ 2·3, caudæ 2, auriculæ 0·5, plantæ 0·65 poll.*

1, Sánju; 2, 3, Kárghalik; 4, 5, 6, 7, 8, 9, 10, Yárkand; 11, Yangihissár; 12, no label;—all skins, except two from Yárkand, which are preserved in spirit.

Colour above sandy-brown to hair-brown, becoming in some specimens pale and rufescent on the sides, under parts white, the colours distinctly separate on the sides. The colour of the upper parts is darker in some skins than in others, and is occasionally slightly greyish (mouse-brown), but usually of a more sandy or yellowish tint like *M. bactrianus*. Fur moderately soft, rather long, (0·3 to 0·35 inch on the middle of the back,) the basal portion blackish slaty; this is the colour of at least three-fourths of the length on the upper parts; the terminal portion in general is light brown, from sandy to light hair-brown, many longer hairs with blackish tips being scattered amongst the fur. On the breast the fur is white throughout, and on the abdomen only the extreme base is dark. Upper part of the head the same colour as the back, whiskers mostly black, only the lowest being white, none appear much to exceed the head in length. Ears large, rounded, hairy; the hairs covering all the posterior portion of the inside are short and brown and rather thinly scattered; some longer hairs near the anterior margin; on the outside the hairs are even shorter except towards the base of the ear, where they are longer and pale in colour. Feet pretty thickly clad above with short white hairs; soles naked. Tail thick, shorter than the body and head, thinly clad with short white bristles throughout; the skin is dark on the upper surface, pale below.

The skins are about $2\frac{3}{4}$ to 3 inches long (head and body); tail 2 to $2\frac{1}{4}$. The following dimensions from two specimens in spirit are, of course, somewhat contracted, the ears especially, but still they are far more trustworthy than any taken on dried skins:—

	Inches.	Inches.
Length from nose to anus	2·35	2·3
Do. of tail	1·9	2
Do. of ear from orifice	0·48	0·5
Breadth of ear laid flat	0·39	0·4
Length of fore-foot (palma)	0·3	0·3
Do. of hind-foot and tarsus	0·65	0·65

A skull measures 0·85 inch in length by 0·47 in breadth; the nasal bones are 0·32 long. It is a longer skull than that of *M. bactrianus*, with much longer nasal bones and longer anterior palatine foramina. The incisors are deep yellow. Length of upper molars 0·13 inch.

This is apparently a house-mouse, one specimen from Kárghalik being labelled "caught in the house," and closely allied to *M. bactrianus*,[1] the house-mouse of Persia, Afghanistan and North-Western India. It has the same sandy-brown colour in general, but it has a shorter and thicker tail. Another form, shewing some resemblance, is *M. pygmæus*[2] from Se-chuan in China, but this is distinguished by having much smaller ears and by not being white below.

[1] Blyth, J. A. S. B., 1846, xv, p. 140; xxxii, p. 347.—W. Blanford, Eastern Persia, ii, p. 56, Pl. V, fig. 2.

[2] A. Milne-Edwards, Rech. Mam., p. 291, Pl. XLIII, fig 1.

A third closely allied species is very probably *M. hortulanus*[1] from Odessa, but that is rather larger, reddish-brown above, and dirty tawny below. Another allied form is apparently *M. prætextus*[2] from Arabia and Syria, but it has a reddish streak down each side, naked ears, and the tail dark on both sides.

There is yet another Western Asiatic mouse, *Mus wagneri*, originally described[3] from the country between the lower Volga and the Ural Mountain in the following terms:—*Supra caudaque griseo-fulvus, subtus abrupte candidus, auriculis majusculis, verruca halucari lamnata, (? laminata,) cauda quam corpus breviore.* The colour does not agree with that of *M. pachycercus*, and in the latter the hallucar tubercle is not laminated. *Mus. wagneri*, too, is smaller than *M. minutus* of Pallas, which is a smaller animal than *M. pachycercus*.

According to Severtzoff[4] *M. wagneri* is an extremely common resident throughout Western Turkestan. He also mentions as *Mus wagneri, var. major* (*M. tokmak?* n. sp.) a form, which he says only differs from *M. wagneri* in its larger size, in which it approaches *M. sylvaticus*. It is a house-mouse, and said to have been obtained in a house in a village built in 1864. No dimensions are given, nor any description except the comparison with *M. wagneri*. Tokmak is the name of a town between Vernoe and Auliáta, lying north-west of Lake Issik and nearly due north of Káshghar. It is far from clear whether *M. tokmak* is proposed as a name, and the description is insufficient to enable the species to be recognized.

37. Mus erythronotus.

W. Blanf., Ann. Mag. Nat. Hist., 1875, Ser. 4, xvi, p. 311.—Eastern Persia, ii, p. 54, Pl. V, fig. 3. *Mus sylvaticus*, var. W. Blanf., J. A. S. B., 1875, xliv, Pt. 2, p. 108; *nec* Linn.

1, Káshghar; 2, 3, 4, 5, Panjah, Wakhán.

In external characters there is very little difference between the skins from Káshghar and Wakhán, and those of the long-tailed field mouse of Europe, *M. sylvaticus*, and in the preliminary list of Dr. Stoliczka's collections the specimens in question were assigned to the European species. The means of comparison were small, the specimens of *M. sylvaticus* in the Indian Museum had faded in colour from exposure, and no skull was available. At the same time I was disposed to consider *Mus erythronotus*, described by myself from Persia, as a variety of *M. sylvaticus*. The skins from Káshghar and Wakhán, I may add, agree very fairly with the description of *M. sylvaticus* by Schreber[5] and Blasius.[6]

Recently, however, I have been enabled, by the kindness of Dr. Anderson, to compare skulls of the Wakhán mouse with one of *M. sylvaticus*, and although the two are nearly allied, there are some differences which make me doubtful whether the former may not belong to a distinguishable race. The skull of *Mus sylvaticus* compared is smaller, measuring only an inch in length, and is from an English specimen. The shape is, in most respects, similar, but when viewed from behind, the occipital portion is much higher in proportion

[1] Nordmann, *apud* Wagner, Supp. Schreb. Säugth., iii, p. 410.
[2] Licht., *apud* Wagner, Supp. Schreb. Säugth., iii, p. 422.
[3] Eversman, Bull. Soc. Hist. Nat. Mosc., 1848, i, p. 191, Pl. I, fig. 2.
[4] Turk. Jev., p. 61; Ann. Mag. Nat. Hist., July, 1876, Ser. 4, xviii, p. 53
[5] Säugthiere, iv, p. 651, Pl. CLXXX; Wagn. Supp. iii, p. 411, &c.
[6] Säugthiere Deutschlands, p. 322.

to its breadth than in the skulls taken from the Panjah skins, and so is the foramen magnum. The opening of the posterior nares in the English skull, too, is much narrower, the breadth being less than that of the anterior molar, whilst in the Panjah skull the breadth exceeds that of the molar considerably; and in the European species the hinder upper molar is much smaller, being only about a fourth of the size of the second molar, whereas in the Panjah skulls the third molar is fully half the size of the second. In the lower jaw also the posterior molar is comparatively smaller in the skull of the English mouse, but the difference is less than in the upper molars.

No specimens of *Mus erythronotus*, obtained by me in Northern Persia, are available for comparison, those destined for the Indian Museum having apparently been mislaid, but the resemblance of the Wakhán skins and skulls to the figure and description is so close, that the two are probaby identical. The only difference I can detect is that in typical *Mus erythronotus* the tail is of the same length as the head and body together, as it is in *M. sylvaticus*; whereas in the Wakhán mouse the tail appears to be a little shorter, in the proportion of 7 to 8. This alone is insufficient for specific distinction. It is; however, by no means improbable that *Mus erythronotus* is merely a local race of *M. sylvaticus*, and with a good series of specimens from various localities, the two might be found to pass into each other. The *Mus sylvaticus*, var. *major*, of Radde[1] is probably allied to the present form.

The following is a description of the Káshghar and Panjah long-tailed field-mouse:—

General colour hair-brown above, becoming rufous in some specimens on the sides, white below, the two colours sharply divided and the line of division running back from the nostrils, so that the upper lip and part of the cheeks are white. Tail brown above and white below; feet white. The fur of the upper parts is long and soft (0·4 inch long on the middle of the back) at least three-fourths of the length blackish grey, the tips mostly yellowish brown, but mixed with numerous slightly longer hairs which are black; these black-tipped hairs disappear on the sides: head above the same colour as the back. Whiskers rather longer than the head, the upper black, lower white; ears oval, thinly clad inside and out with short hairs, which are brown, except on the posterior margin, where they are whitish. Feet clothed with white hair above: the thumb has a small claw. Tail covered below and on the sides with whitish hairs, longer than in *M. pachycercus*, the hairs on the upper surface being brown in general, but partly white in some specimens.

In skins the head and body measure about 4 inches, tail $3\frac{1}{2}$. The following measurements are noted by Dr. Stoliczka on the label of one of the Panjah specimens:—

	Inches.
Length of head and body	4
Ditto of tail	3·5
Ditto of head	1·15
Distance from snout to eye	0·5
Ditto from snout to ear	1·
Length of ear from front base	0·65
Ditto ditto measured from behind	0·58
Width of ear	0·5
Length of fore-foot	0·4
Ditto of hind-foot	0·9

Iris brown, soles of feet fleshy white, reddish at the base.

[1] Reisen, i, p. 103, Pl. V, fig. 3, 4.

The following are the dimensions of a perfect skull, taken from one of the skins from Panjah :—

	Metre.	Inches.
Length from occiput to end of nasal bones	·0265	1·08
Breadth across hinder part of zygomatic arches . . .	·013	0·53
Least breadth of frontal region between orbits	·004	0·16
Length of nasal bones	·010	0·4
Do. of anterior palatine foramina	·005	0·19
Do. of row of upper molars	·004	0·15
Do. of lower jaw from angle to symphysis . . .	·0125	0·52
Height of ditto ditto	·007	0·29

38. Gerbillus cryptorhinus. Pl. X; Pl. X b, fig. 5.

W. Blanf., J. A. S. B., 1875, xliv, Pt. 2, p. 108.

G. supra rufescenti-arenaceus, subtus albus, coloris dorsalis ventralisque limite bene notato, rostro in lobum semicircularem, intus pilis brevibus sparsis indutum, nares obtegentem, desinente ; caudâ corporis capitisque longitudinem excedente, cum dorso superne fere concolore, sed magis rufescente nisi apicem versus, ubi nigrescit, subtus pallidiore, pilis nonnullis ad apicem caudæ longioribus nigrescenti-fuscis, auriculis mediocribus, ovalibus, extus antice dense pilosis, mystacibus confertis, capitem longitudine parum excedentibus, supremis nigris, cæteris albis ; vellere longiusculo, molli, nitido, basin versus ad tergum schistaceo ; palmis subnudis, pilis sparsis indutis, plantis confertissime pilosis ; dente molario ultimo simplici, incisoribus unisulcatis. Long. exempli majoris nuper occisi a rostro ad basin caudæ 5·5, caudæ 6·25, auris 0·75, pedis posterioris a calcaneo 1·4 poll. Long. exempli minoris 4·5, caudæ 5 poll.

1, 2, 3, 4, 5, Kárghalik ; 6, Yárkand ; 7, Marálbáshi ; 8, 9, 10, Yangihissár ; all skins ; 11, in spirit, no label.

Colour above sandy rufescent, some specimens rather more rufous than others, below white, the two colours sharply divided on the sides ; cheeks pale ; supercilia whitish ; feet white ; tail above rather more rufous than the back, paler and occasionally whitish below, becoming dark-brown or blackish above near the end, and with the slight tuft of longer hairs at the end of the same dark colour. Fur soft and glossy, about half an inch long in the middle of the back, all the basal portion, being at least three quarters of the length, dark ashy, the terminal portion pale yellow-brown to pale rufous, with numerous longer hairs with black tips mixed. On the under surface the hairs are white throughout. On the tail the hair is rather short, coarse, and close together ; there are a very few longer black tips mixed, but scarcely enough to produce an effect in the general colour.

The ears are oval and of moderate length, densely clad with brown hairs on the anterior portion of the outer surface, and with a fringe of longer hairs on the anterior margin ; the posterior portion of the external surface is nearly naked, except near the margin ; and the anterior portion of the inner surface completely destitute of hair ; but the inner surface is more hairy near the hinder margin. The whiskers are very numerous, the longest slightly exceeding the head, the uppermost behind being black ; all the rest white ; all are mixed at the base with long hairs which cover the side of the nose. Soles of the fore-feet with scattered white hairs, but nearly naked ; those of the hind-feet densely covered with hair

everywhere, except at the extreme tips of the toes and at the heel. Mammæ 8, 4 pectoral, and 4 inguinal, as usual in the genus.

The most remarkable character of this species is the presence at the end of the snout of a semicircular lobe[1] which forms a flap completely covering the openings of the nostrils. This lobe can, of course, only be well seen in the specimen preserved in spirit, in the dried skins its presence can sometimes be detected, but not always. In the only spirit specimen, an adult female, the flap measures about 0·3 inch in breadth, and is barely an eighth of an inch long. It is hairy both outside and inside, the hairs being very short and rather scattered inside; the surface below the nostrils covered by the flap is also hairy. The use of this lobe is evidently to keep out sand and dust from the air-passages.

The following measurements are Dr. Stoliczka's, taken from the label of a specimen (sex not marked) from Kárghalik, and are doubtless from the fresh animal. On the label it is noted that the specimen was the largest seen. I add in another column (2) the dimensions of the specimen preserved in spirit, a female, and of course slightly contracted :—

	Inches.	Inches.
Length from nose to rump	5·5	4·5
Do. of tail without the hair at the end		5
Do. of do. with do.	6·25	5·75
Distance from eye to snout	0·8	
Do. do. to ear	0 3	
Length of ear from front base to tip	0·75	0·55
Do. from orifice		0·5
Greatest breadth of ear	0·6	0·4
Length of fore-foot	0·5	0·45
Do. of hind-foot	1·4	1·3

The following are the dimensions of a skull :—

	Metre.	Inches.
Length from occiput to end of nasal bones	·037	1·45
Breadth across hinder part of zygomatic arches	·019	0·76
Least breadth between orbits	·007	0·28
Length of nasal bones	·014	0·55
Do. of lower jaw from condyle to symphysis	·0195	0·76

In the skull of this species, the lachrymal bone appears not to be anchylosed to the adjoining bones, as it is in other forms of the genus. It is free in one fully adult specimen, and entirely wanting, having evidently been lost, in two others, which have been extracted from skins. I noticed that the process of the lachrymal, which in other species of *Gerbillus* projects from the anterior angle of the orbit, was deficient in the first two skulls which I examined, but it was only when I obtained a third skull, extracted from a specimen in spirit, that I found this was due to the lachrymal not being united to the surrounding bones as it usually is.[2]

This species is allied to *G. meridianus*[3] from the Caspian, but is considerably larger, with a much longer tail. It is still nearer to *G. tamaricinus*,[4] but differs in colour, in

[1] I am indebted to Mr. Oscar Fraser for calling my attention to this character, which he noticed when extracting the skull. I had overlooked the lobe at my first examination.

[2] Although it is not very probable, I would suggest the possibility of the absence of this process in *Rhombomys (Meriones opimus)*, as noticed by Brandt (Bull. Acad. Sci. St. Pet., xiv, 1856, p. 76,) being due to the same cause.

[3] *Mus meridianus*, Pallas, Reise, ii, p. 702; *Dipus meridianus*, Pal., Zoog. Ros. As., i, p. 182.—*Mus longipes*, Pallas, Glires, p. 316.

[4] *Mus tamaricinus*, Pallas, Glires, p. 323.

having the tail longer than the body, and apparently in having a shorter head and more hairy ears. Another form showing considerable resemblance is *G. unguiculatus*[1] from Chinese Mongolia, which, however, is represented as wanting the dusky tip to the tail, and as having the tail shorter than the body. This species agrees with *G. cryptorhinus* in having hairs on the soles of the fore-feet as well as on those of the hind, but the skull is more convex above, and has the prominent lachrymal process united to the frontal. From the other Asiatic forms there are greater differences. From *G. indicus*[2] and *G. persicus*[3] the present species is distinguished by its hairy hind-feet and shorter head; from *G. erythrurus*[4] and *G. hurrianæ*[5] by its very differently shaped and much longer head, its white under surface, &c.; and from *G. psammophilus*[6] by its much longer tail. It is, moreover, to the best of my knowledge, distinguished from all the species named by the peculiar flap covering the nostrils. There is certainly nothing of the kind in *G. indicus*, *G. persicus*, *G. hurrianæ*, or *G. nanus*, nor can I find it described in any other species.

A *Gerbillus*[7] is described by Severtzoff from Western Turkestan under the name of *Meriones collium*. It is said to be rufescent above, white below; the hairs of the tail rufescent and black mixed; the tuft at the end of the tail of two colours, fuliginous and canescent; "the black tail-tuft surrounded by a pale-grey margin." The description does not agree sufficiently with the present form to render it probable that it refers to the same species; the description of the tail, and especially of the tuft at the end, shows the Western Turkestan animal to be distinct, and the tail is said to be shorter than the body. *G. collium* is, however, said to be allied to *G. tamaricinus*; so it probably resembles *G. cryptorhinus* very closely. *G. opimus*, *G. meridianus*, and *G. tamaricinus* are also said to be found in Western Turkestan.

Family—*DIPODIDÆ*.

39. Dipus lagopus.

Lichtenstein in Eversman's Reise nach Buchara, p. 121.—Brandt, Bull. Ac. Imp. St. Pet., 1844, ii, p. 218.

1, Koshtak, South of Yárkand; 2, Yárkand; 3 Yangihissár.

These specimens agree on the whole fairly with Lichtenstein's original description and measurements; the ears are rather larger, but the difference does not appear great. The tarsi are also a little longer. The following is a short description: colour above light sandy-brown, slightly washed with dusky; below pure white; a white band across the outside of the thigh. Tail pale-brown above, whitish below, with a tuft of longer hair, altogether about $2\frac{1}{2}$ inches long; at the end the terminal portion pure white, the proximal portion black or dark-brown on the upper part and sides, but brown or white beneath the tail. The fur is very soft and rather long, 0·6 to 0·8 inch in the middle of the back; on the upper

[1] A. Milne-Edwards, Ann. Sc. Nat., Ser. 5, Vol. vii, 1867, p. 377.—Rech. Mam., p. 142, Pl. Xa, XI.
[2] Hardwicke, Trans. Lin. Soc., viii, p. 279, Pl. VII.
[3] W. Blanf., Eastern Persia, ii, p. 66, Pl. VII, fig. 1.
[4] Gray, Ann. Mag. Nat. Hist., 1842, Ser. 1, x, p. 266 (*nec* Jerdon, Mam. Ind., p. 187.)
[5] Jerdon, Mam. Ind., p. 186.—W. Blanf., Eastern Persia, ii, p. 68.
[6] A. Milne-Edwards, Rech. Mam. p. 144.
[7] Turk. Jev., p. 83; Ann. Mag. Nat. Hist., July, 1876, Ser. 4, xviii, p. 55. It appears to have been first called *M. montanus*, but the name was changed because of there being a South African species called *Gerbillus montanus*.

parts it is ashy-grey at the base and for the greater part of its length, pale sandy-brown near the end, the extreme tip dusky brown; on the lower parts it is white throughout. Ears about half the length of the head, oval, naked inside, thinly clothed with short brown hair outside; face sandy; the hairs grey at the base; sides of head whitish; whiskers, as usual, very long, exceeding 3 inches; the uppermost brown, the longest white, except at the base, the lower entirely white; the long hairs beneath the hind-feet all white, as are the feet throughout.

The following dimensions, doubtless from the freshly killed animal, are marked by Dr. Stoliczka on the label of the specimen from Koshtak :—

	Inch.
Whole length, tail included	11·75
Length of tail (hairs at end included apparently)	6·75
Distance from snout to eye	0·7
Do. eye to ear	0·25
Length of ear measured behind	0·75
Breadth of do.	0·55
Length of fore-foot and claws	0·55
Do. hind-foot	0·8
Do. tarsus	1·75
Length of foot (hind-leg) measured from knee.	4

In dried specimens the ear measures 0·65 from the orifice, and 0·5 in width; tarsus and hind-foot from calcaneum to end of claws 2·35.

The following are the dimensions of an adult skull :—

	Metre.	Inches.
Length	·033	1·3
Breadth across zygomatic arches	·021	0·84
Length of nasal bones	·013	0·52
Breadth of do. behind	·003	0·12
Do do. in front	·004	0·16
Height of orbit	·008	0·3
Breadth of do.	·0045	0·18
Breadth of frontal region between orbits	·010	0·4
Length of molars of upper jaw taken together	·006	0·23
Breadth of palate between last molars	·004	0·15
Length of lower jaw from angle to symphysis	·0155	0·6
Height of do.	·0075	0·29

The dentition agrees with Brandt's description. There are 4 molars in the upper jaw, 3 in the lower, on each side; the anterior upper molar is minute, simple, almost cylindrical; the other three each with 3 convex folds outside, the anterior fold being much smaller than the others, and two folds inside; in the lower jaw the anterior molar has 3 folds inside, 2 outside, the second 3 folds on each side, the third 2 folds outside, but no distinct fold inside, a groove which occurs there being confined to the crown of the tooth and doubtless disappearing in older skulls.

This species was described by Lichtenstein from a pair obtained by Eversman, on his return journey from Bokhara, in the deserts near the Sea of Aral. Severtzoff includes it in the list of animals found in Western Turkestan.[1] It is a typical *Dipus*. *D. jaculus*, *D. acontion*, *D. sagitta* var. *telum*, and *D. platyurus* are also said by Severtzoff to be found in the same country.

[1] Turk. Jev., p. 62; Ann. Mag. Nat. Hist., July, 1876, Ser. 4, xviii, p. 56.

Family—*LEPORIDÆ.*

40. Lepus hypsibius. Pl. III, fig. 1; Pl. IVa, fig. 1.

W. Blanf., J. A. S. B., 1875, xliv, Pt. 2, p. 214.

Lepus pallipes, Blyth, Cat. Mam. Mus. As. Soc., p. 131. — W. Blanf., J. A. S. B., 1875, xliv, Pt. 2, p. 109, *nec* Hodgson.

L. oiostolus, Adams, P. Z. S., 1858, p. 520, *nec* Hodgson.

L. major, rufescens, nigro-adumbratus, subtus albus, uropygio fuscescenti-griseo, caudâ floccosâ, omnino albâ, vellere dorsali densissimo subcrispato, auriculis breviusculis, capitem longitudine parum excedentibus, antice extus fusco-rufescentibus, postice albescentibus vel albis. Long. corporis cum capite in corio dessicato ad 24 poll., tarsi 5, auriculæ a capite 4·5, cranii 3·6.

1, Pamzal, Changchenmo valley (immature); 2 Kium, 15,500 feet, adult; both localities in Northern Ladák.

The following description is taken from the Kium specimen, which was killed in October. Colour rufous-brown, more or less mixed with black on the back, dusky ashy on the rump; lower parts white with a slight rufescent tinge. Fur long, woolly, rather curly and thick; on the anterior portion of the body the hairs are about $1\frac{1}{4}$ inches long, ashy at the base; further back the basal portion becomes creamy white; beyond the middle of each hair there is a blackish ring, then a pale-brown one, the extremity being black. Towards the rump, the hairs are fully two inches long, and for the most part ashy-grey throughout, a few only having short black tips. On the sides the hair is rufous-brown, except at the base, where it is ashy, on the lower parts white with a slight rufous tinge throughout. On the neck the hairs are rufous-brown, those on the back of the neck having ashy tips; on the breast they are paler rufous. Head brown, whitish round the eyes, whiskers partly black, partly white; outside surface of ears brown in front, whitish behind, the brown hairs having short black tips, no distinct dark band in front. Extreme tip of ears black, the colour only running a short distance down each margin. Ears inside clad, towards the tip and posterior margin, with buff hairs, a brown band near the hinder margin, which is buff. Tail white throughout. Limbs chiefly white, a brownish band running down the anterior portion of the fore-legs.

In the younger specimen from Pamzal, the hinder portion of the ear is white, and the black tips to the dorsal fur less developed, a pale streak running along each side of the face, through the eye. Both specimens appear a little stained in parts. In both the thickness of the fur beneath the tarsi is remarkable.

The length of the adult skin from Kium, as nearly as it can be measured round the curve of the back, is 24 inches from nose to rump; ears from orifice $3\frac{1}{2}$, from the head between the ears $4\frac{1}{2}$, breadth of ear laid flat two inches (all these measurements would be more in fresh specimens), tarsus to end of claws 5 inches.

I learn from Dr. Cayley that hares in Tibet vary much in colour with the season. The specimens obtained were shot in October, when they had probably assumed their winter garb. They are said, however, to become paler and greyer in winter.

The following are the dimensions of the skull in the Kium specimen:—

	Metre.	Inches.
Length of skull from occiput to front of incisors . . .	0·92	3·63
Greatest breadth of skull across posterior portion of zygomatic arches	·044	1·73
Width between orbits	·026	1·02
Length of nasal bones	·037	1·46
Breadth of do. behind	·017	0·68
Do. do. in front	·014	0·55
From base of hinder upper incisor to foremost molar . . .	·027	1·06
Length of the row of upper molars taken together at base .	·016	0·63
Do. of palate behind anterior palatine openings . . .	·007	0·27
Breadth of palate between 3rd pair of molars	·012	0·5
Length of lower jaw from angle to symphysis . . .	·062	2·46
Height of do.	·040	1·59

The specimen in the collection of the Asiatic Society of Bengal (now in the Indian Museum), which was identified by Mr. Blyth with *L. pallipes*, belongs evidently to the same species as the skins collected by Dr. Stoliczka in Ladák. This specimen was, I believe, presented by Captain Smyth, who collected in the Western Himalaya and in Western Tibet, but the name of the donor is omitted in Mr. Blyth's catalogue.

I was at first disposed to identify this hare with *L. pallipes*, Hodgson, and I included it under this name, though with a mark of doubt, in the list of Dr. Stoliczka's collections, J. A. S. B., 1875, p. 109. After this list was published, however, I received from Mr. Mandelli, of Darjiling, specimens of a hare which I have no hesitation in identifying with the true *L. pallipes*, and I found them to differ, both in the skins and skull, from the present species. I consequently described the Western Tibetan form as *L. hypsibius*.[1]

The differences between the two species are that the fur in *L. hypsibius* is denser and longer on the tarsi, and less woolly on the back; the size is larger, but the ears in proportion considerably shorter, and rather differently coloured. The dark band on the anterior portion of the ears, and the whitish posterior surface, are more developed in *L. pallipes*, and the inner surface is whiter. The general colouration of *L. hypsibius* is much more rufous. In the skull of *L. hypsibius* the teeth are larger, the palatal opening narrower behind, the forehead less concave, and the posterior portion of the nasals differently shaped.

L. hypsibius appears to be found throughout a considerable tract in Western Tibet, keeping always to considerable elevations, but the relative distribution of this and the other Tibetan hares is very imperfectly known.

There is a bare possibility that this may be the *L. oiostolus*[2] of Hodgson, described from young specimens, and stated by its describer to be found in Ladák[3]; but I think it is not the same, for young specimens of *Lepus pallipes* agree much better with Mr. Hodgson's description. The ears of *L. oiostolus* are said by Waterhouse[4] to be similarly coloured with those of *L. tibetanus*. This is not the case in *L. hypsibius*.

[1] The name in this case, as in that of *Mus sublimis*, is given on account of the high elevation at which the species is found living.

[2] J. A. S. B., ix, 1840, p. 1186.

[3] J. A. S. B., xi, 1842, p. 288.

[4] Rodentia, p. 62.

41. Lepus pallipes, *var.* Pl. III, fig. 2.

Hodgson,[1] J. A. S. B., 1842, xi, p. 288.—Waterhouse, Rodentia, p. 62.
? L. oiostolus, Hodgs., J. A. S. B., 1840, ix, p. 1186.
? L. tibetanus, Anderson, P. Z. S., 1871, p. 563, nec Waterhouse.
Tagh-toshkhan (mountain hare), Yarkandi (Scully).

1. No label.

The only specimen which I refer to this species is without a label, but I think it very probable that it was shot in the Kárákásh valley. An examination of the skull shows that it is just adult.

The general colouration is pale rufous-brown, the whole of the rump being pure ash-grey. The basal portion of the fur is dark slaty everywhere, except on the middle of the back, where it is very grey and nearly white, and on the lower parts and tail, where the hair is white throughout. There are very few black tips to the hair on the back; a few longer black hairs are mixed, but they are not numerous, and they are so fine that they are easily overlooked. The ends of the hairs on the nape and along the back of the neck are pale grey. Sides of the neck and breast pale rufous. Tail white, except near the base above, where there are a few dark-grey hairs. On the ears dark-brown longitudinal bands are conspicuous on the anterior outer portion and the posterior inner surface. The anterior edge of the ear is white, the posterior edge buff inside, the upper portion of the inside surface white. The anterior portion of the outer surface (except where dark-brown or white) is rufous-brown, the posterior portion white, becoming ashy near the base. The extreme tip is black; this colour runs a short distance down the anterior, and nearly half-way down the posterior edge. Face brown, with a well-marked, pale, lateral band through the eye; side of nose whitish; the longer whiskers black near the base, white on the terminal portion; other whiskers black, except a few of the lowest, which are white.

The fur is extremely dense, soft and woolly, slightly curved on the back and sides; the hairs on the tarsus not so long as in *L. hypsibius*.

The length of the skin from nose to rump is about 18 inches; tail, including the hairs at the end, 5; tarsus, 4·6; ears from the head 4·5, from the orifice 3·6.

The following are the dimensions of the skull:—

	Metre.	Inches.
Length from occiput to front of incisors	·090	3·55
Greatest breadth across posterior portion of zygomatic arches	·0425	1·68
Width between orbits	·027	1·05
Length of nasal bones	·035	1·45
Breadth of do. behind	·019	0·74
Do. do. in front	·014	0·55
Length from base of hinder upper incisors to foremost molar	·027	1·05
Do. of the row of upper molars	·0145	0·57
Do. of palate behind anterior palatine opening	·006	0·24
Breadth of palate between 3rd pair of molars	·0125	0·5
Length of lower jaw from angle to symphysis	·065	2·55
Height of do.	·038	1·5

Of the original types of *L. pallipes* described by Hodgson, two were from Lhassa and one from Sikkim. Through the kindness of Mr. Mandelli of Darjiling, I have had an opportunity

[1] In the original description the name is printed *pallipes*. I think this must be a mistake or misprint for *pallidipes*, as the English name is given as "white-foot." As the same specific name, however, is given to the Indian wolf and to some other animals, it would be inconvenient to change it.

of examining some specimens of hares procured from the portion of Tibet north of Sikkim. These specimens agree well with the original description of *L. pallipes*, except that the colour of the lower parts is white, not rufescent hoary (the latter is probably a mistake), and that I am unable to detect any triannulation of the outer piles in the fur except in a few black-tipped hairs on the middle of the back. The term "ears largely tipped with black," too, does not apply; the black tips, I should say, are rather narrow. But these are possibly individual differences, and the general colouration, a peculiar yellowish tint, well shown in the figure, coincides precisely, as does the distribution of colour. The dimensions correspond, except that "head $4\frac{3}{4}$" must, I think, be too much, but it is not possible to tell how the head was measured. A skull over 4 inches long would be gigantic and quite out of proportion to the size of the animal.

These specimens from Eastern Tibet look at first very distinct from the Western skin obtained by Dr. Stoliczka, the latter being much more rufous and less yellow. But on close examination, this and the paler colour of the under-fur, which is silky-white on the middle of the back in the former skins, are the only distinctions, the distribution of colour and proportions are the same, and the skulls are very much alike; indeed, two skulls extracted from Eastern Tibetan specimens differ nearly as much from each other as either does from that of the Western Tibetan animal. Despite the difference in external appearance, therefore, I hesitate to consider these two forms distinct.

This western more rufous form may, of course, be Mr. Hodgson's *L. oiostolus*, which he says is the prevalent species in Ladák, but the type of that species was a very young animal not sufficiently mature for identification. Unfortunately, the name was the first given, and it is therefore important to recognize the species if possible.

The four specimens brought by Dr. Henderson from the first Yárkand Expedition, and described by Dr. Anderson in the Proceedings of the Zoological Society under the name of *L. tibetanus*, are quite immature, being scarcely half-grown. One is labelled Kárákásh, another Gogra hot-springs. The last, which is very young, probably belongs to *L. hypsibius*, the others to the present species; but the specimens are much too young for identification. They are paler in colour than adults, and the fur more woolly. I do not think any of them belongs to the true *L. tibetanus*.

These young hares, however, differ considerably in colour from an Eastern Tibetan specimen sent by Mr. Mandelli, which is more grey, and has, I think, still more woolly hair, thus suggesting the appropriateness of Mr. Hodgson's name *oiostolus*.

42. Lepus tibetanus. Pl. IV, fig 2.

Hare of Little Tibet, Vigne, Travels in Kashmir, &c., ii., p. 268.

L. tibetanus, Waterhouse, P. Z. S., 1841, p. 7.—Nat. Hist. Mam., Rodentia, ii, p. 58.—Günther, Ann. and Mag. Nat. Hist., 1875, Ser. 4, xvi, p. 228.

1, 2, Nubra valley, Ladák.

I should have been unable to identify this species but for Dr. Günther's having compared the hares obtained by Captain Biddulph in the Nubra valley with the type in the British Museum, which is, I suppose, that originally brought by Vigne from near Skárdo, and described by Waterhouse. Dr. Günther points out that the specimens from Nubra, although rather smaller in size, agree with the type very well, and may be distinguished from both *L. pallipes* and *L. oiostolus* of Hodgson by having straight, not curled, hairs.

The two specimens in the collection were both procured by Dr. Bellew; (Dr. Stoliczka did not traverse the Nubra valley). They differ so much from each other, that I was for a time disposed to consider them as belonging to distinct species, but there is no important difference between the skulls. Both were shot in October. The following is the description of the older specimen, which I suppose to be still in summer vesture. The skin has been slightly stained, and is rather more rufous than it should be.

General colour rufous brown (very dark-brownish tawny) above, white below; tail whitish below, sooty black above; face and anterior surface of ears like the back, tips of ears black, the colour running for some distance down the posterior margin.

Fur soft but short, scarcely an inch long on the middle of the back, very pale brownish at the base for about half its length (palest as usual in the middle of the back), then darker brown; towards the end pale rufous brown, the extreme tips being frequently black on the back. Neck and breast pale rufous; the basal portion of the hair browner. Head in front brown; cheeks rather paler; ears brown in front outside, pale brown behind, black at the tip and for some distance down the posterior margin; hair on the inside of the ear and on the anterior margin isabelline. The hair on the head and ears everywhere very short, so that the ears are almost naked inside. A light brown band down the front of the fore-leg, the exterior portion of thigh and tarsus the same colour: pads darker. Hairs of lower portion and sides of tail buffy[1] white throughout, those of the upper surface sooty black near the end, blackish ashy towards the base. Length of dried skin from nose to rump $16\frac{1}{2}$; tail with hairs at end 4, without 3; tarsus to end of claws 2·75; ears outside, from the head between the ears, 4·5, from orifice 3·5; breadth laid flat 2·25.

The following is the description of the younger specimen which has been, I think, shot whilst assuming the winter coat. In midwinter, however, it would doubtless be paler and greyer, its dark brown colour being due to the newness of its fur. This is the specimen figured on Pl. IV.

General colour above dusky brown, with an ashy tinge on the rump, lower parts white; tail white, with a broad black band on the upper surface. The fur is very soft and short; the hair on the middle of the back being only three-quarters of an inch long, and on the rump $1\frac{1}{4}$. The dorsal fur is ashy at the extreme base, then very pale, hair brown; in the longer hairs towards the tip there is a dusky ring succeeded by a very pale rufous one, the extreme tip being black. Nape and neck above and at the sides pale rufous; breast similar but paler and duller. Head dusky brown; the hairs buff and blackish mixed, whitish round the eye and on the chin; whiskers mostly black, the apical portion of the longer and a few of the smallest lower hairs white. Ears thinly clad near the margins inside with whitish hair; a brown band near the posterior edge; the edge itself buff, the anterior edge with longer white hairs, anterior external portion of the ear mouse-brown, (finely mixed dusky and buff,) posterior portion very pale-brownish grey. Apex of the ear externally black; a line of the same colour runs forward for about an inch from the apex and just outside the posterior margin for about half-way down the ear. Limbs mostly white, a very light brown stripe down the front of the fore-legs. Length of skin (apparently stretched) from nose to rump about 20 inches; ear from head between the ears 4·25, from orifice 3·5; breadth laid flat 2·25; tarsus from calcaneum to end of claws 4·6.

[1] The colour is probably white, but the specimen with some others was packed damp and appears to have become stained. On this account the specimen has not been figured.

The following are the measurements of the skull, which is unfortunately imperfect. The skull of the other specimen is equally imperfect below and at the occiput:—

	Metre.	Inches.
Greatest breadth across posterior portion of zygomatic arches	·040	1·59
Width between orbits	·023	0·9
Length of nasal bones	·036	1·42
Width of do. behind	·017	0·67
Do. do. in front	·013	0·52
From base of (hinder) upper incisor to foremost molar	·023	0·9
Length of the six molars taken together	·0155	0·61
Do. of palate behind anterior palatine opening	·006	0·24
Breadth of do. between 3rd pair of molars	·0115	0·47
Height of lower jaw from base to coronoid process	·040	1·58

This hare is much smaller than *L. hypsibius*, and very differently coloured; the fur is much shorter and less woolly, and the tail has a broad black band above. The skull differs in several points. The palatine opening is much broader behind, the molars comparatively wider apart, muzzle shorter, the postorbital processes rise much less above the plane of the frontals, the lower edge of the zygomatic arch is nearly straight and not angulately convex, &c.

From the shortness of the fur I should have anticipated that this hare would be an inhabitant of a less severe climate than *L. pallipes* and the species hereafter described.

Recently specimens of a hare procured by Major Biddulph in Yassin near Gilgit, and closely approaching *L. tibetanus* in external characters, have proved, on examination of the skull, to belong to a different species, and have been described by myself as *L. biddulphi*.[1]

43. Lepus yarkandensis. Pl. IV, fig. 1; Pl. IVa, fig. 2.

Günther, Ann. Mag. Nat. Hist., Ser. 4, xvi, p. 229.—W. Blanf., J. A. S. B., 1875, xliv., Pt. 2, p. 109.

Toshkhan, Yárkandi (Scully).

L. *parvus, affinis* Lepori tolai, *sed multo minor, nusquam niger nec griseus, auriculis usque ad apicem concoloribus, haud nigris, arenaceo-isabellinus, fusco plusve minusve ad dorsum lavatus, lateribus lacteis, pectore pallidissime rufo, caudâ albâ, superne fuscâ; vellere molli, longiusculo, ad basin cinereo. Long. a rostro ad basin caudæ 17, capitis 3·6, caudæ 4, auris 4·25, tarsi 4·25 poll.*

1, 2, Yárkand; 3, Yangihissár; 4, skin, 5, skeleton, Kalti-ailák near Fyzabád; all localities in the plain of Yárkand and Káshghar.

General colour light brown or sand colour, above more or less mixed with dusky, becoming pale isabelline, almost cream colour on the sides, without any trace of grey on the rump; tail dark brown above; ears without any black at the end, though in one specimen there is a slight dusky tip; face and anterior portion of the ears the same colour as the back; lower parts, as usual, white; fur very soft and long, fine and woolly towards the base, and with numerous hairs rather longer than the rest, scattered throughout the body; these hairs have dusky tips on the back. The dorsal fur is pale grey at the extreme base for about a quarter of an inch, then pale rufous for at least half an inch; towards the end there is a dusky ring,

[1] J. A. S. B., 1877, xlvi, Pt. 2, p. 324.

and the points are pale buff, almost cream colour, but some of the hairs have blackish tips, which are in some specimens sufficiently numerous to produce a distinctly dark wash. The length of the fur on the middle of the back is about $1\frac{1}{4}$ inches. On the sides and rump the hair is darker grey at the base, and the dusky ring near the tip is wanting. The hairs on the nape are pale rufous throughout, on the breast pale rufous to almost white, with the basal portion ashy. Hair of the face rather long, ashy at the base, then brown, becoming darker near the tip, which is generally very pale; some hairs, however, have black tips. Round the eye the fur is paler. Whiskers very few and inconspicuous, the upper black, the lower brown or white. Anterior external surface of ears the same colour as the face, posterior portion light isabelline or whitish. The apex in some is dusky, but in two specimens out of the four this is scarcely perceptible, and it is not black in any. Long hairs on anterior edge of ear white, those inside the ear of the same colour, but becoming buff towards the margin; the dark band near the posterior edge very faint. Fore-legs very pale brown in front; hind-legs still paler brown outside; pads rather darker, but variable as usual. Tail white below and at the sides, with a broad dark brown band above, the hairs of which are dusky grey at the base.

One striking peculiarity of this very pale coloured hare is the absence of any black patches and of all grey colouration throughout. All the specimens were shot in winter. The animal is very small, the following dimensions being from one of Dr. Stoliczka's labels to a Yárkand skin:—

	Inches.
Length	17 [1]
Tail from vent.	4 [2]
Length of ear from base	5·25
Greatest width of do.	2·8
Length of head	3·6
Length of fore-foot.	2·15
Do. hind-foot	4·25

In the skin the length from nose to rump of this specimen is 18 inches; ears from head between the ears 4·3; width of ear laid flat 2·25; tarsus 4 to 4·25. In the skeleton the skull measures 3·2 inches, vertebræ of neck and body 11·5, tail, consisting of 12 vertebræ, 3·25.

The following are the dimensions of a skull, (Pl. IV*a*, fig. 2.) It is very small, though fully adult, with peculiar short nasals, which are somewhat irregularly truncated behind near their outer margins, but slope away from the posterior end of the suture, where the frontals project forward in a point; each nasal is convex in front, the suture occupying a depression. The breadth behind the postorbital processes is greater than in the allied species, and the supraorbital expansion of the processes is smaller than usual in the genus:—

	Metre.	Inches.
Length from occiput to front of incisors	·078	3·1
Breadth across zygomatic arches	·037	1·45
Width between orbits across middle of postorbital processes	·021	0·82
Do. of frontal bones behind do.	·014	0·55
Length of nasal bones	·0285	1·13
Width of do. behind	·0155	0·61
Do. do. in front	·01	0·4
Length of six upper molars taken together	·014	0·55

[1] This, I think, does not include the tail.
[2] Evidently the hair at the end is included.

	Metre.	Inches.
Length of palate behind palatine opening	·005	0·2
Breadth of palate between 3rd pair of molars	·011	0·42
Length of palatine opening	·0185	0·72
Do. of lower jaw from angle to symphysis . . .	·054	2·13
Height of do.	·036	1·42

This species approaches *L. tolai*, Pallas, but is much smaller with proportionately longer ears. It appears to be the common species of the Káshghar and Yárkand plains, and may very possibly be the hare noticed by Prejevalski near Lake Lob.

44. Lepus pamirensis. Pl. V, fig. 1; Pl. Va, fig. 1.

W. Blanf., J. A. S. B., 1875, xliv, Pt. 2, p. 110.—Günther, Ann. Mag. Nat. Hist., 4, xvi, p. 229.

L. *supra arenarius vel fusco-isabellinus, infra albus, uropygio albescenti-cinereo; caudâ superne nigrâ; auricularum marginibus superioribus extus nigris; pectore pallide rufo; vellere denso, molli, ad basin, præter ventrali, cinereo; pilis longioribus ad dorsum nigro-terminatis intermixtis. Long. a rostro ad basin caudæ circiter 18, caudæ 4, auriculæ a basi anticâ 5, ejusdem latitudo 2·75, cranii longitudo 3·5, tarsi 5 poll.*

1, 2, Lake Sirikul, Pámir.

General colour very pale sandy-brown, almost isabelline on the back and sides; rump greyish white; tail black above; face and anterior portion of the ears the same colour as the back; terminal portion of ears black outside the edge; breast light rufous; lower parts, as usual, white. Fur fine, close and soft, consisting at the base of fine woolly fibres mixed with coarser hairs, the former slaty-grey for about half an inch, then pale-rufous passing into dusky-brown, the tips being sandy. Throughout the fur coarser and longer piles are scattered; these are white near the base on the back, showing conspicuously amongst the grey under-fur, and black at the ends. The basal portion of the fur is darker on the rump, sides, and shoulders, than on the middle of the back. There are no black or dusky tips to the fur in general on the back, but only to the scattered longer hairs. Length of ordinary hairs on the middle of the back 1 to $1\frac{1}{4}$ inches, longer piles $\frac{1}{2}$ to $\frac{3}{4}$ inch more. On the rump, as usual, the hair is longer. The nape, sides of the neck and breast are pale rufous, or rufescent isabelline, the hairs being slaty-grey at the base. Face and sides of head pale sandy-brown, nearly the same as the back, with longer black piles scattered throughout the fur; hairs slaty at the base, then brown, tips sandy; a very distinct white line from the upper lip to behind the eye, which it includes; chin and upper part of throat pure white. Ears sandy brown on the anterior outer surface, nearly the same colour as the face, anterior margin white, posterior outer surface creamy-white, becoming rufous near the base; outer margin at the apex and for a varying distance down the hinder margin black or blackish.[1] Hair on inside buffy-white, except the band near the posterior margin, which is brown. Fore-legs in front and hind-legs outside with a light brownish tinge; pads much darker. Hairs of the tail white throughout their length below and on the sides, black throughout above. Both animals were shot on May 1st. They do not appear to have lost their winter coats.

[1] This probably varies with the season; it is more distinct in one specimen than in the other.

The following dimensions were marked by Dr. Stoliczka on one of the labels, and were doubtless taken on the fresh animal :—

	Inches.
Length of head and body	17·5[1]
Do. of tail	4[2]
Do. of head from snout to occiput	4·2
Do. do. do. to eye	2·2
Do. of ear from front base	5
Greatest width of ditto	2·75
Fore-foot	2·6
Hind-foot	5·3

The skins measure about 18 inches from nose to rump, tail with hair 4, ears from head between the ears 4·5, from orifice 3·6, tarsus to end of claws 4·8 to 5.

The following are the dimensions of a skull (Pl. Va, fig. 1) :—

	Metre.	Inches.
Length of skull from occiput to front of incisors	·089	3·5
Greatest breadth across zygomatic arches	·041	1·6
Width between orbits	·026	1·03
Length of nasal bones	·038	1·51
Breadth of do. behind	·018	0·75
Do. do. in front	·013	0·5
From the base of the hinder upper incisor to foremost molar	·026	1·05
Length of the six molars taken together	·016	0·65
Do. of palate behind palatal opening	·007	0·25
Breadth of do. between 3rd pair of molars	·012	0·46
Length of lower jaw from angle to symphysis	·059	2·31

The skull very much resembles that of *L. tibetanus;* the nasal bones have the same form, but the skull is larger in all its dimensions; the posterior portion of the frontal bones is more convex, and the breadth of the cranium behind the postorbital processes greater. The external colouration and fur are very different and are nearer to those of *L. yarkandensis*. *L. pamirensis* is distinguished from that species by the black upper portion of the tail, by the grey rump, and by the admixture of longer piles, black at the end, on the back. The present species is also larger, though still inferior in size to *L. tolai*, from which it is distinguished, moreover, by its longer ears. Dr. Günther especially notices the "extraordinarily dense and comparatively long and stiff fur" on the front part of the ears in this species, and the denseness of the short, stiff fur on the back.

L. pamirensis is very possibly peculiar to the high Pámir plateau. It has some resemblance to *L. biddulphi*, the Gilgit species.

45. Lepus stoliczkanus. Pl. V, fig. 2; Pl. Va, fig. 2.

W. Blanf., J. A. S. B., 1875, xliv, Pt. 2, p. 110.

L. *præcedenti peraffinis, arenario-fulvus, differt tantum auriculis multo longioribus, vellere dorsali nigro lavato. Long. corii desiccati a rostro ad basin caudæ 17·5, caudæ*

[1] The number on the label appears to be 11·5, but this is palpably not intended.

[2] Probably the hair at the end is included.

(vertebrarum) 3, ejusdem cum pilis apicialibus fere 5, cranii 3·5, auriculæ extus 5·2, tarsi 4·9.

1, 2, Jigda, Altum Artush district, N.-E. of Káshghar.

This species is very close to *L. pamirensis*, but appears to be distinguished by its much longer ears, by wanting the distinct white cheek bands, and by having black tips to the dorsal fur, producing a blackish wash on the back. The fur is rather softer, and the colouration of the underfur darker.

The general colour above is light sandy-brown, much mixed with black on the back; the rump very little paler; tail rather long, black above; face and anterior portion of ears the same colour as the back; terminal portion of ears black outside; nape and breast light rufous, lower parts white. Fur soft and long, consisting, as in the last species, of two kinds, the one woolly and fine at the base, the other longer, coarser and straight throughout; throughout the upper parts the fur is ashy at the base for about three-quarters of an inch (the colour being much darker and slaty on the shoulders, sides and rump, paler in the middle of the back), then brown for half an inch, light at first, becoming darker away from the body, the portion near the end is sandy-brown, and the tip itself in many hairs black on the back only. The longer scattered hairs are white at the base, and conspicuous amongst the finer grey woolly fur, and have the distal portion black. Length of ordinary fur on the back 1½ inches, the longer piles half an inch more. Nape, back and sides of neck and breast pale rufous; the hairs dark slaty at the base, but this colour on the nape is only perceptible quite close to the skin. Face sandy-brown, fur slaty at base, then chocolate-brown; the tips very pale sandy; longer black piles are scattered throughout. A faint line from the nose to the eye, and hair around the eye pale, but there is no distinct white band. Upper and shorter whiskers black, lower long whiskers white, black near the base. Ears in front sandy brown like the face; hair on the anterior edge white; posterior portion of outer surface pale rufous or buffy-white, near the tip black, this colour running as a narrow line for some distance down the posterior margin. Hair inside the ear mostly white, buff towards the edge, darker band inside the posterior edge dusky brown, not much developed. Hind-legs on outside, and fore-legs in front, pale sandy rufous; pads darker. Hair of tail white throughout below and on the sides, black throughout above.

The following are the dimensions of the skins: length, nose to rump, 17·5; tail (vertebræ), 3; hair at end of tail, 2; length of ears from head, 5·2; length of ears from orifice, 4·25; breadth of ears laid flat, 2·5; tarsus to end of claws, 4·9.

The skull (Pl. Va, fig. 2) differs much both from that of *L. yarkandensis* and that of *L. pamirensis*, the nasals being much more abruptly truncated behind than in either, and the parietal region or sinciput flatter. The size is about the same as that of the latter. The following are the dimensions, the length being only approximate, as the occipital portion in both specimens is imperfect.

	Metre.	Inches.
Length about	·090	3·55
Breadth across zygomatic arches	·041	1·62
Width between orbits	·024	0·93
Do. of frontal bones behind postorbital processes	·013	0·52
Length of nasal bones	·036	1·42
Width of do. behind	·017	0·66
Do. do. in front	·0105	0·41

	Metre.	Inches.
Length of six upper molars taken together	·016	0·62
Do. of palate behind palatine opening	·006	0·25
Breadth of palate between 3rd pair of molars	·012	0·48
Length of palatine opening	·022	0·88
Do. of lower jaw from the angle to the anterior alveolar margin	·0625	2·47
Height of do.	·037	1·48

This species inhabits the outer hills of the Thian Shan range north and north-west of Káshghar, and is frequently referred to in Dr. Stoliczka's diary; it appears to be very abundant.

Lepus stoliczkanus is perhaps allied to *L. lehmanni* of Severtzoff,[1] the hare of Western Turkestan. The latter, however, is described as having the ears but little longer than the head.[2] The colouration, too, presents several differences, as will be seen from the following description of *L. lehmanni*: "The colour is just like that of *L. timidus*,[3] the shoulders and back are yellowish grey brown; each hair is marked with black and light yellowish-brown rings; the flanks are lighter, in summer they are yellowish-grey, and ash coloured in winter, the nose, cheeks and tip (? top) of the head are grey; the nape of the neck is greyish yellow, with soft unicolorous hair; the throat and breast as far as the front legs are greyish yellow, the hair being brownish yellow with grey tips; in summer the underfur on the coloured portions of the animal is light brown grey, and in winter grey; the tail is white with a broad black line on the upper portion; the belly is white. The ears are greyish white with a wide centre line of the colour of the back on the exterior, and with a narrow black edge on the terminal half of the ear."

The colour of the neck in *L. stoliczkanus* is pale rufous, not greyish yellow, and the ears are very light brown, not greyish white; besides several other differences.

The other hares hitherto described from Central Asia, besides Hodgson's two species already mentioned, *L. oiostolus* and *L. pallipes*, are *L. timidus*, L., (*L. variabilis*, Pal.) and *L. tolai*, both of which are found, according to Pallas, (Zoog. Ros. As. I., p. 149,) in the Trans-Baikal region and the deserts of Mongolia; and *L. hybridus(?)* from the Altai mountains. We have as yet no satisfactory information as to the hare or hares found in Afghanistan and Northern Persia.

No species is enumerated amongst the animals brought from Eastern Tibet by Père David, and described by M.M. Milne-Edwards,[4] whilst the only form observed by the same traveller in Northern China was *L. tolai* (Nouvelles Arch. du Mus., 1867, Vol. III, Bulletin, p. 27). Further to the north-east a hare was found by Radde and described as *L. mandshuricus*,[5] and from Eastern or South-Eastern China another form is known, *L. sinensis*[6]. In the 'List of the specimens of mammalia in the British Museum' (1843), p. 126, a *Lepus altaicus*,

[1] Turk. Jev., p. 83; Ann. Mag. Nat. Hist., Aug. 1876, Ser. 4, Vol. xviii, p. 169.

[2] In the original description of *L. stoliczkanus* I stated that the ears in *L. lehmanni* were the same length as the head. In the complete translation of Severtzoff's descriptions subsequently published in the Annals and Magazine of Natural History, l. c., the ears are said to be "longer than the head: if bent forward along the side of the head, they extend beyond it about 6—7 lines." The dimensions of the ears in the dried specimens of *L. stoliczkanus* show that the difference in length in this species would be much greater.

[3] That is the *L. europæus* of Pallas, *L. timidus* of some modern authors, not of Linnæus. The true *L. timidus* of Linnæus is, of course, *L. variabilis* of Pallas.

[4] Nouv. Arch. Mus., 1871, vii, Bull. p. 90.

[5] Radde, Bull. Acad. St. Pet., 1861, iv, p. 52.

[6] Gray and Hardwicke, Illustrations of Indian Zoology; see also Blyth, J. A. S. B., 1861, xxx, p. 90.

is quoted with, as synonym, *L. variabilis altaica*, Everm. (*sic.*) ; and again, in Gray's notes on the skulls of Hares, &c., in the British Museum, a *Lepus altaicus*, Brandt[1] is mentioned. This is doubtless *L. altaicus*, Gray, of Fitzinger[2]. Neither writer gives any reference, and I can find no description of the species by either Brandt or Gray. Waterhouse in his mammalia[3] identifies the specimen thus named, which is said to be from the Altai mountains, with *L. hybridus*, Desm. The specimen in the British Museum was from M. Brant's (? Brandt's) collection, and the locality is therefore possibly correct, but I cannot but think that Waterhouse's identification needs confirmation.

Family—*LAGOMYIDÆ.*

46. LAGOMYS LADACENSIS. Pl. VI, fig. 1 ; Pl. VII,[4] fig. 2 ; Pl. VIIa, fig. 1.

Günther, Ann. Mag. Nat. Hist., Ser. 4, xvi, p. 231.—W. Blanf. J.A.S.B., 1875, xliv, Pt. 2, p. 110.
Lagomys curzoniæ, Stoliczka, J.A.S.B., 1865, xxxiv, Pt. 2, p. 108.—Anderson, P.Z.S., 1871, p. 562, *nec* Hodgson.
Zabra, Karin or *Phise karin*, Ladák.

L. major, pallide cervinus, seu rufescenti-fulvus, dorso in æstate magis rufescente, auriculis rotundatis, majusculis, extus ferrugineis, velleris dorsalis dimidio basali nigrescenti-plumbeo, apiciali primum rufescente, tunc demum albescenti-isabellino, pilis nonnullis longioribus nigris ad dorsum intermixtis, ventre pedibusque pallide fulvis, capite antice rufescente, vibrissis superioribus nigris, inferioribus albis. Long. tota circa 9, cranii 2·25, auriculæ 1, tarsi 1·5 poll.

1, skin, Chágra, north of Pangong lake ; 2, 3, 4, skins, 5, skeleton, Rimdi, 17,000 feet ; 6, skin, Kiziljilga, (both the two last localities are on the high plateau north of Ladák) ; 7,8, skins without labels, probably from Gogra, north of Rimdi.

Some years ago, when describing the *Lagomys* from Upper Sikkim,[5] I pointed out that it agreed much better with Mr. Hodgson's description of *L. curzoniæ* than did the Ladák species referred to the latter by Dr. Stoliczka. Mr. Hodgson's types were presented to the British Museum, and Dr. Günther has recently examined them, and finding that my suggestion was correct, and that the Ladák species is different, he has named the latter *L. ladacensis*.

Dr. Stoliczka's description is excellent and is here copied. He states that it is founded on four specimens, of three of which exact measurements are given :—

"General hue of the upper body pale buff, fulvous, with very slight rufous tint and tipped with dark brown ; below whitish, with translucent dusky blue. The larger hairs of the fur measure about $\frac{7}{8}$th of an inch ; the lower part, for more than half their length, of a dark, slaty-blue colour, with silky lustre ; the next portion pale fulvous, and the tip dark-brown or black. The fur is full and very soft, as Hodgson remarks, and can be readily distinguished from that of *L. rufescens*, Gray. Chiefly in old specimens, there are, on the sides

[1] Ann. Mag. Nat. Hist., 1867, Ser. 3, xx, p. 223.
[2] Sitzb. K. Akad. Wiss. Wien. Math. Nat. Cl., 1867, lvi, 1 Abt. p. 165.
[3] Rodentia, ii, p. 45.
[4] In plates VI, VII representing this species and *L. auritus*, a mistake has been made. It was proposed to figure *L. ladacensis* in summer and winter vesture, on Pl. VI. The lower figure in Pl. VI is *L. ladacensis* in winter dress, but is somewhat too dark ; the upper figure is *L. auritus*. Figure 2, Pl. VII, is *L. ladacensis* in summer dress. The colouration of both figures in Plate VI is unsatisfactory, the lower figure should be much more buff, the upper figure browner and less yellow.
[5] J.A.S.B., 1872, xli, p. 35.

of the upper portion of the body, a few long hairs intermingled, which measure up to one and a quarter inches; these are almost or entirely of a black colour.

On the lower part of the body the hairs are, for two-thirds of their length, dark slaty-blue, and the rest pale.

The head measures nearly always one-fourth[1] of the total length of the animal. The hairs on it are much shorter, and tinged with a dark rufous tint above; on the sides of the snout they are pale grey; in front of the eyes and below, pale white; while on the sides of the head itself there is a slight rufous tint marked, which is a little stronger all round the neck, and extends somewhat further back on the upper body. The hairs round the neck are rather longer, but only half their length of the slaty colour, the rest being pale rufous; but a few of them are tipped with black.

The end of the snout and of the upper and lower lips are dark blackish. The hairs of the moustaches are very long, some of them measuring three inches; the upper ones are chiefly black; the lower white or half black, half white. The ears are comparatively rather large, oval, terminating with a very obtuse point; they are well covered with hair, thickest on the outside: the hairs on the inner surface being pale yellow, those on the outer much longer and softer, and distinctly rufous. The feet and soles are, in accordance with the general hue, of a pale fulvous colour, only still lighter, and slightly, and only partially, tinged with a rusty tint; the toes are black, claws long and dark-brown.

The young animal does not differ in colour very much from the old one. It is usually much paler, and the difference between the hue on the upper and lower portions of the body is far less distinctly marked. The slaty hue of the inner fur is also more translucent, and the rufous tint on the head and the hinder part of the ears not so strong.

The measurements, in inches, of three specimens from Rupshu, the eastern province of Ladak, are as follows:—

	(a).	*(b)*.	*(c)*.
Total length of the animal	7·50	9·00	9·50
Length of the skull	1·90	2·25	2·37
Proportion of the length of the skull to the total length	0·26	0·25	0·25
Width of the skull	0·87	1·25	1·25
Porportion of width to length of the skull	0·46	0·55	0·52
Length from the snout to the eye	0·75	1·00	1·00
Length from the eye to the ear	0·93	1·12	1·12
Length of the ear	0·62	1·06	1·00
Width of the ear	0·56	0·87	0·81
Proportion of the width to length of the ear	0·90	0·82	0·81
Length of fore-foot and nails	0·87	1·12	1·12
Length of the hind-foot and nails	1·25	1·50	1·43

(*a*) Young specimen from above the Gyagar lake in Rupshu.

(*b*) An old, full-grown specimen from near Kozak on the Chomoriri lake in Rupshu.

(*c*) Judging from the teeth, this seems to be a very old specimen, from the east side of the Lanak pass, west of Hanle.

This latter specimen has the fur considerably worn off and injured. I found in the skin of this and some other specimens, which I shot in the Puga valley, a great number of larvæ of an *Œstrus*, which causes the injury and a sort of roughness of the fur.[2] As the tips of the hair get worn off, the hue becomes in some places dark spotted, which is caused by the slaty colour of the interior portions.

It will be seen from the given measurements that the skull of the young animal is, in proportion to the entire body, a little longer and broader than that of the adult, and the ears are also somewhat larger (? smaller). These proportions may be often observed in mammalia of different ages.

Lagomys curzoniæ is one of the largest known species of the genus. Our largest specimen measures 9½ inches, which is only one line less than the greatest measurement of *Lagomys alpinus*, Pallas. (*Vide* Water-

[1] One-fifth in the original, but this is evidently, from the measurements, a slip or misprint.

[2] Anderson, P. Z. S., 1871, p. 563, says the worn condition and roughness of the fur is noticed on those parts which are most exposed to become rubbed, as on the lumbar region, rump and sides, and he rejects Stoliczka's explanation. But it should be borne in mind that Stoliczka made his observations on fresh animals

house, Mammalia, Vol II, Rodentia, p. 16). Mr. Hodgson's specimens were much smaller, and probably younger.[1] I observed several which were not longer than seven inches, but most of them were about nine inches long.

The people of Korzak called *L. curzoniæ*, *Phise-karin*, which means, as I was informed, *tailless Phise*. *Phise* or *Pheese* is the name of *Phaiomys leucurus*,[2] which lives here associated with the *Lagomys* and *Arctomys*. The name *Phise-karin* I was told is Tibetan, and the Ládak name for *L. curzoniæ* is *Sabra*. Hodgson gives the name *Abra;* it is, however, well known that the letter *s* before many words is, in some parts of Tibet, pronounced; in others, not so.

The first place where I met with *L. curzoniæ* was a little above the junction of the Chomoriri with the Para valley at a height of about 15,500 feet above the level of the sea. It does not live usually at a lower elevation than this; and if otherwise, as in the lower parts of the Puga valley (14,500 feet), it is always scarce. Round the Chomoriri lake, where there is comparatively plenty of vegetation, it is associated with *Phaiomys leucurus*, Blyth, and *Arctomys bobac*, Schreber.

L. curzoniæ ranges, however, somewhat higher. I noticed it on the top of the Lanak pass at an elevation of 18,672 feet, where only two minute plants existed—*Stracheya tibetica*, Bth., and *Capsella thomsoni*, Hf.—both flowering in August. It is found associated with *Corvus tibetanus*, Hodgs., *Gyps fulvus*, Gmel., and a new species of *Procarduelis*, among birds; an *Argynnis* among butterflies, and some common flies, forming the highest observed animal life in these hills. In fact, it is difficult to assign a limit to the height up to which *L. curzoniæ* lives. I believe it ranges as high as any trace of vegetation exists, which would be here about 19,000 feet, or very near it. Between the two given limits of the Para valley and 19,000 feet, it is seen in great abundance all over the eastern portion of Ladak. It is certainly the species of Adams and Cunningham, as there is to my knowledge no other *Lagomys* here,—at least, none so common. Its geographical range must extend farther to the east and south-east, as Mr. Hodgson obtained his specimens from the district of Chumbi (north-west of Sikkim ?). I have not observed it south of the Baralatse range, either in Spiti or in the south-eastern part of Lahoul, the Chandra valley; although *Phaiomys leucurus* does occur in both provinces, and even in Kulu. In Spiti, *Lagomys curzoniæ* is represented by the smaller *L. roylei*, Ogilvy, which there lives between 12,500 (above Lari) and 16,000 feet, but usually about 13,000 feet.

From a comparison of the fine series of specimens in the Indian Museum brought back by the first Yárkand Expedition with those now obtained, it is clear that there is a considerable difference between the summer and winter coat of this species. All the specimens now obtained, except the two supposed to be from Gogra, have evidently acquired their winter fur: the two without labels are undergoing the change; they have the long pale-coloured winter fur on their shoulders and rumps, but have not acquired it elsewhere. Of the specimens obtained by the former Expedition, all but one were killed in summer, whilst a single specimen procured in October agrees with the other skins collected in the same month and in September. The following are the distinctions:—

Summer Coat.—Fur shorter and very soft, the pale tips not more than a quarter the length of the hairs; general tinge often rufous on the face and back; hair frequently considerably worn, especially on the back, so that the dark basal portion shews.

Winter Coat.—Fur longer and less soft, the pale tips nearly half the length; general colour rufescent fawn with a slightly greyish tinge; dark basal portion of the fur entirely concealed, except on the abdomen; outside of ears alone distinctly rufous, though there is a slight wash on the face. At this season the hairs on the soles are much longer, and the pads of the toes are sometimes completely concealed.

[1] Hodgson, however, especially states that his specimens were ascertained to be adult by an examination of the teeth, J. A. S. B., 1857, xxvi, p. 207.

[2] *Phaiomys Cucurus*, Schreber, in the original. Doubtless *Phaiomys leucurus*, Blyth, is meant, the specific name being a misprint.

The skull of *L. ladacensis* differs entirely from those of *L. roylei* and *L. rufescens*, and appears to approach those of *L. alpinus* and *L. ogotona*.[1] As in the last named species, the maxillary bones approach each other so as nearly, but not quite, to isolate the front portion of the anterior palatine opening from the longer portion between the anterior molars. The nasals are much narrower behind than in front, and rather convex anteriorly; the orbits close together, the sinciput flattened, the occipital plane low and broad, and the rows of upper molar teeth considerably curved inwards in front.

The following are dimensions of a skull:—

	Metre.	Inches.
Total length	·048	1·9
Breadth across zygomatic arches	·024	0·95
Do. between orbits	·0035	0·14
Length of nasal bones	·016	0·62
Breadth of do. behind at posterior end of premaxillaries	·0035	0·14
Do. do. in front where broadest	·006	0·24
Longitudinal diameter of bony orbit including temporal portion	·014	0·55
Transverse diameter of do.	·0105	0·43
Length of 5 molars in upper jaw taken together	·01	0·4
Distance from anterior molar to hinder incisor	·012	0·45
Breadth of palate between last pair of molars	·008	0·32
Length of palate behind palatine opening	·002	0·08
Length of palatine opening	·014	0·55
Breadth of do. behind	·004	0·17
Length of lower jaw from angle to symphysis	·033	1·29
Height of do.	·019	0·75

Unfortunately Dr. Günther has only described the external characters of the true *L. curzoniæ*, and it is uncertain whether the skull is like that of *L. ladacensis* or that of *L. roylei*, &c., but the latter is more probable.

To the account of the distribution of this *Lagomys* already quoted from Dr. Stoliczka, it is only necessary to add that it appears to be extremely common on the plateau north of Ladák. It was not observed in the Indus Valley, nor on the Pankong lake, nor is it noticed in Dr. Stoliczka's diary before reaching Chágra, north of the Pankong lake.

47. Lagomys auritus. Pl. VI,[2] fig. 2; Pl. VIIa, fig. 2.

W. Blanf., J. A. S. B., 1875, xliv, Pt. 2, p. 111.

L. superne sordide fulvus fusco-lavatus, capite humerisque rufescentibus, auriculis magnis, rotundatis, pilis isabellinis indutis, vellere molli, pilis basin versus nigrescenti-plumbeis, apices versus in dorso lateribusque isabellinis, fusco-terminatis, subtus albis. Long. (*in corio dessicato*) *tota circiter 7·5, cranii 1·8, auris 1, tarsi 1·2 poll.*

1, skin; 2, skeleton, with flat skin; Lukong, on the Pankong lake.

General colour above smoky or wood-brown; the head, shoulders and rump rather paler and more rufous; lower parts whitish, with the dark basal portion of the hair shewing through.

[1] This species is made the type of a distinct genus, *Ogotona*, by Gray, Ann. Mag. Nat. Hist., 1867, Ser. 3, xx, p. 220. The characters given, entirely drawn from the skull, appear to be scarcely of generic value.

[2] See foot-note p. 71.

Fur very soft, moderately long, about 0·9 inch long on the middle of the back, without any scattered longer hairs, black and glossy (leaden black) at the base on the upper parts, somewhat more slaty on the sides and below, distal portion of the dorsal hairs whitish, tips dark-brown; the same on the sides; on the abdomen the tips of the hair are white; on the head the basal portion of the hair is light slaty-grey, the tips rufous. Ears large, round, clothed rather thinly inside near the margin with whitish-brown hairs, and outside with much longer hairs of the same colour. Whiskers fine and long, the upper dark-brown, the lower white. Feet whitish.

The skin measures about 8 inches in length, the skeleton 7 (the living animal would be rather more); the ears in the dried skin an inch in length or rather more, and the same in breadth; tarsus to end of claws 1·2; carpus to end of claws 0·7.

In the skull the anterior and posterior portions of the anterior palatine foramen are united, without any tendency to a constriction between them. The nasal bones are much narrower than in *L. roylei*, and the sincipital portion is more convex; otherwise there is much resemblance between the two.

The following are the dimensions of the skull of *L. auritus*:—

	Metre.	Inch.	Metre.	Inch.
Total length			·044	1·73
Do. breadth across zygomatic arches	.021	0·82	·0215	0·85
Length of nasal bones	·0155	0·6	·016	0·63
Width of do. behind	·0045	0·18	·0045	0·18
Do. in front	·0055	0·22	·0065	0·26
Do. of frontal bones between orbits	·005	0·2	·005	0·2
Longitudinal diameter of orbits (including temporal portion)	·011	0·44	·0115	0·46
Transverse diameter of do.	·0095	0·38	·010	0·4
Length of palatine opening	·012	0·47	·013	0·52
Antero-posterior diameter of bony palate behind palatine opening			·002	0·07
Width of palate between last pair of molars	·0075	0·3	·007	0·28
Length of the 5 upper molars taken together	·009	0·37	·009	0·35
Length of lower jaw from angle to symphysis			·028	1·12
Height of do.			·017	0·67

This species differs from L. *roylei* by its much larger ears and by its colour, which is lighter. It probably is found in other parts of Ladák.[1] Skins obtained at Gilgit and in the Kishengunga valley by Captain Biddulph,[2] however, appear to be intermediate in characters between *L. roylei* and *L. auritus*.

48. Lagomys macrotis.

Günther, Ann. Mag. Nat. Hist., 1875, Ser. 4, xvi, p. 231.

1, Skin without label.

There is a single specimen, without a label, of a *Lagomys* with the fur in poor condition, in the collections made by Dr. Stoliczka. It has evidently been shot when shedding its long

[1] Some specimens of *Lagomys* noted in Dr. Stoliczka's list of his collected specimens as having been procured at Matayan near Drás, Khárbu, Leh and Chagra, are not forthcoming.

[2] J. A. S. B., 1877, xlvi, Pt. 2, p. 326.

winter fur; and as Dr. Stoliczka mentions in his diary that he obtained a *Lagomys* with the fur very ragged on the 6th of June at Dúba, and as this specimen agrees well with Dr. Günther's description of the type of *L. macrotis*, obtained by Captain Biddulph at the same spot, I have no hesitation in concluding that the skin without a label is from Dúba. It is the only skin in the whole collection which presents the appearance of having been killed when just losing its long winter fur. Dúba is a camping ground at an elevation of 10,440 feet on the north side of the Kuenlun, on the road from Yárkand to Yangi Diwán and the Kárákoram pass *viâ* Kugiár.

Although I felt very doutful about it, I referred this skin to *L. auritus* until I saw Dr. Günther's description, which is evidently taken from a specimen in better condition. It runs thus:

Fur very soft and long, especially on the hind part of the back; general hue of the upper parts pale buff yellow, whitish on the sides and underneath; a small white patch behind the ear; feet pure white; chin white; the hairs of the moustaches white, but some of them black. Apparently no glandular patch below the ear. Ears very large, well covered with hairs. Soles of the feet covered with short hairs, leaving the pads of the toes quite bare.

	Inches.
Total length	8
Length of ear	$1\frac{1}{8}$
Length of tarsus, including nails	$1\frac{3}{8}$

In the specimen collected by Dr. Stoliczka, the long hair on the back is leaden-black at the base and for the greater portion of its length, then dirty white, the ends being buff, and a few hairs having black tips. But the new short fur which is growing between the patches of the long hair is brownish, precisely as in *L. auritus*. I am strongly disposed to suspect, indeed, that *L. auritus* is the summer, *L. macrotis* the winter garb of the same speeies; but there are one or two differences which require explanation. The feet appear larger in *L. macrotis*, and the pads of the toes are black, whilst in *L. auritus* they are pale coloured: in the former the long hair of the forehead is lead black at the base, in the latter pale grey. The feet and lower parts generally are white in *L. macrotis*, buffy white in *L. auritus*; but this may be seasonal.

The skulls are very similar. From the imperfect skull extracted from the skin of the specimen referred to *L. macrotis*, I take the following measurements:—

	Metre.	Inches.
Total breadth across zygomatic arches	·02	0·81
Length of nasal bones	·016	0·63
Width of do. behind	·005	0·2
Do. do. in front	·0055	0·22
Do. of frontal bones between orbits	·005	0·2
Longitudinal diameter of orbit	·012	0·48
Transverse diameter of do.	·01	0·39
Length of palatine opening	·013	0·54
Antero-posterior diameter of bony palate behind palatine opening	·002	0·07
Width of palate between last pair of molars	·009	0·35
Length of 5 upper molars taken together	·009	0·35
Length of lower jaw from angle to symphysis	·03	1·2
Height of do.	·017	0·7

49. Lagomys griseus, Pl. VII, fig. 1; Pl. VIIa, fig. 3.

W. Blanf., J. A. S. B., 1875, xliv, Pt. 2, p. 111.

L. sordide griseus, subtus albus, ad dorsum frontemque leviter rufescenti-lavatus, vellere elongato, molli, ad basin plumbeo-nigro, apices versus in dorso lateribusque griseo, apicibus ipsis nonnullis fuscis; auribus magnis rotundatis, pilis sparsis albidis indutis. Long. in exemplo nuper occiso 7, capitis 1·75, auris 1·4, tarsi 1·3 poll.

1, 2, south of Sánjú Pass, south of Yárkand, Kuenlun Range.

General colour dull-grey (almost chinchilla colour) with a slightly rufescent tinge on the face and back, lower parts white. Fur very soft, about 0·9 inch long in the middle of the back, glossy leaden black at the base, and for about two-thirds of its length very pale, ashy-grey towards the end, the extreme tips of many hairs dark-brown, and on the back the tips of all the hairs are brownish. The sides are almost pure light ashy, rump still paler, feet white. Hair on the face long, on the forehead about half an inch, the basal portion black, the terminal portion light-brown on the forehead, greyer on the nose, and pure grey on the sides of the head. A few of the upper whiskers are black, all the longer and lower vibrissæ white throughout. Ears large, round, with rather thin white hairs inside, very short hairs close to the margin, white on the outside, black on the inside, outer surface covered with whitish hairs which become long near the base of the ear.

The following measurements are taken from one of the tickets, and consequently are doubtless those of the animal when freshly killed; the measurements from the dried skins are added for comparison with other species:—

	Fresh specimen. Inches.	Dried skins. Inches.
Total length	7	6·5 to 7·5
Length of ear	1·4	1·1
Width of do.	1·3	1·
Length from nose to eye	0·9	
Do. do. to base of ear	1·7	
Do. fore-foot	0·8	0·8
Do. hind-foot	1·3	1·3

The following are the measurements of a skull barely adult:—

	Metre.	Inches.
Total length	·044	1·75
Do. breadth across zygomatic arches	·022	0·86
Length of nasal bones	·0155	0·6
Width of do. behind	·005	0·2
Do. do. in front	·0055	0·22
Do. of frontal bones between orbits	·006	0·23
Longitudinal diameter of orbit	·011	0·45
Transverse diameter of do.	·009	0·36
Length of palatine opening	·013	0·52
Breadth of do. behind	·006	0·23
Antero-posterior diameter of bony palate behind palatine opening	·002	0·08
Width of palate between last pair of molars	·0075	0·3
Length of five upper molars taken together	·009	0·36
Do. of lower jaw from angle to symphysis	·029	1·12
Height of do.	·017	0·7

A comparison of these measurements with those given for *L. auritus* will show how very close they are to each other; the principal distinction being that in *L. griseus* the nasals are broader behind, and the posterior portion of the palatine opening is much more open than in *L. auritus*. There are also important external differences between the two species; the hair in *L. griseus* is longer and rather softer; it is especially longer on the face, and has all the basal portion in that region black, whilst in *L. auritus* the basal portion of the hairs on the head is light-grey. The general colour of the two species, too, is quite different, *L. auritus* being brown, whilst *L. griseus* is grey.

From *L. macrotis* the present species is distinguished by colour, and the skull differs in the same characters as it does from that of *L. auritus;* the nasal bones being broader behind and the posterior portion of the palatine opening more open. The bony orbits also are rather smaller in *L. griseus*.

The nasal bones of *L. griseus* approach in shape those of *L. roylei*, being nearly as broad behind as in front, but they are longer.

It appears possible that *L. auritus*, *L. griseus*, and *L. macrotis* are all races or subspecies of one typical form just as *L. roylei*, *L. nipalensis*, and *L. tibetanus* appear to be. All these forms are very closely connected.

The other species of *Lagomys* known from Asia are *L. roylei*,[1] from the North-West Himalayas, *L. hodgsoni*,[2] from the same region, considered subsequently by its describer identical with *L. roylei*, *L. nipalensis*,[3] from Nipal, and *L. curzoniæ*[4] from the Chumbi valley north-east of Sikkim. By Mr. Waterhouse[5] *L. nipalensis* was considered a distinct species, but Mr. Blyth[6] united it, as well as his own species *L. hodgsoni*, to *L. roylei*. As noticed under *L. ladacensis* Dr. Stoliczka, in 1864,[7] identified the common *Lagomys* of Ladák with *L. curzoniæ*, but the species occurring in Sikhim was found to agree better[8] with Mr. Hodgson's description than the Ladák form did, and I consequently suggested that the latter would prove to be an undescribed species, whilst I was disposed to consider the true *L. curzoniæ* as a variety of *L. roylei*. Dr. Günther has, however,[9] recently examined the species represented in the British Museum, and he considers *L. curzoniæ* a well marked and distinct species, and from his description I am inclined to doubt if the Sikkim form is really *L. curzoniæ*.

An additional species has been admirably described and figured from Moupin in Eastern Tibet by A. Milne-Edwards[10] under the name of *L. tibetanus*: this, however, appears very closely allied to *L. roylei* and *L. nipalensis*.

The above are all from the Himalayan ranges and Tibet, but the genus is also well represented in Northern Asia, where the three oldest known species occur. These were described as long ago as 1778 by Pallas[11] as *Lepus pusillus*, *L. alpinus*, and *L. ogotona*; the first from the Southern Ural, the second from the Altai, and the third from the neighbourhood of Lake Baikal and the deserts of Mongolia. To these a fourth was added by Pallas[12] from

[1] Ogilby in Royle's illustrations of the Botany, &c., of the Himalayan Mountains, p. lxix, pl. 4.
[2] Blyth, J. A. S. B., 1841, x, p. 816, Pl. at p. 844.
[3] Hodgson, J. A. S. B., 1841, x, p. 854, Pl. at p. 816.
[4] Hodgson, J. A. S. B., 1857, xxvi., p. 207.
[5] Mam., ii, p. 24.
[6] Cat. Mam. Mus. As. Soc., p. 133.
[7] J. A. S. B., 1865, xxxiv, pt. 2, p. 108.
[8] J. A. S. B., 1872, xli, p. 35.
[9] Ann. Mag. Nat. Hist., Ser. 4, xvi, p. 230.
[10] Rech. Mammifères, i, p. 314, Pl. XLVIII and XLIX.
[11] Glires, pp. 28-70, Tab. I, II, III and IV.
[12] Zoog. Ros. As., i, p, 152.

North-Eastern Siberia and called *L. hyperboreus*. Of the latter, four varieties are described and figured by Schrenk[1] from the Amur.

From the western portion of Central Asia two species have been obtained: *L. rufescens*, described by Gray[2] from Afghanistan, and since found by myself in Persia;[3] and *L. rutilus* recently described by Severtzoff[4] from Western Turkestan. The latter is described as greyish-yellow in winter, with a black admixture (? down the back) beginning from the nape. In summer it is light fiery-red above, with the throat chesnut. Length 8½ inches. Some notes on this species were sent to me by Mr. Dresser who obtained them from Dr. Severtzoff. *L. rutilus* is distinguished from *L. rufescens* by complete absence of white on the muzzle and middle of the neck, and inner parts of all four legs, all these parts being light buff; the flanks, throat, and outside of the legs fulvescent rufous. Upper parts greyish fulvous mixed with some black hairs, ears large, covered with short, harsh, greyish fulvous hair, moustachial bristles (*vibrissæ*) fulvous, a few being black, nails black. The above is the winter dress. *L. rutilus* has been found in the ranges near Vernoe and Auliata, north and north-west of Káshghar.

Order—UNGULATA.

Sub-order ARTIODACTYLA.

Family—*SUIDÆ*.

50. Sus scrofa, var. nigripes.

W. Blanf., J. A. S. B., 1875, xliv, Pt. 2, p. 112.

1, 2, Thian-Shan mountains near Káshghar.

The two specimens brought, skins with skulls, are of large size, and appear to agree fairly in external characters with the common European wild boar, except that the whole of the fore and hind-feet, with the greater part of the legs, are nearly black. Elsewhere the general colour is dull, rather light-brown, the fur consisting as usual of long bristles and shorter woolly hairs; the former black, except towards the ends, where they are pale yellowish-brown; the latter rather light hair-brown; just around the eye is black; and the ears are clothed with brown hair, darker than that of the head and back.

The skulls are very similar to those of the European wild boar, but present, nevertheless, several marked differences from the only example I have for comparison, that of a male from Hungary. The first difference to be noticed is that, in both the skulls from Turkestan, the occipital plane makes a more obtuse angle with the base of the skull, and a more acute one with the superior surface than in the European skull. In the Turkestan skulls the styliform paroccipital processes are longer, straighter and less divergent; the auditory bullæ larger; the nasal septum less ossified posteriorly, so that the hindermost portion of the nasal

[1] Reis. u. Forsch. im Amur-lande, i, p. 147, pl. VII, VIII.
[2] Ann. Mag. Nat. Hist., 1842, Ser. 1, x, p. 266.
[3] Eastern Persia, ii, p. 83, pl. VI, fig. 2.
[4] Turk. Jev., p. 83, Ann. Mag., Nat. Hist., Ser. 4, xviii, p. 168.

passages is not completely divided. The palatine bones terminate near their suture in small points projecting backwards. The anterior palatine foramina are shorter, broader, and very differently shaped, being much more oval and not acuminate behind. The zygomatic arch is deeper, and the ante-orbital foramen is less open and has a thread-like horizontal process stretched partly or completely across its orifice.

How far these differences entitle the Thian-Shan pig to specific distinction I cannot say without much better means of comparison than I possess at present. If the cranial differences pointed out are never found in European pigs, and if the black legs are equally unknown in typical *Sus scrofa*, the animal of Turkestan may have fair claims to be separated.

The following are comparative measurements of the two skulls from the Thian-Shan mountains, and of the Hungarian skull already referred to—

	Yárkand.		Hungarian.
	♂ Metre.	♀ Metre.	♂ Metre.
Length of the skull from occipital condyle to anterior margin of premaxilla	·377	·352	·372
Height of whole skull and lower mandible	·250	·226	·239
Length of superior surface from occipital crest to anterior margin of premaxilla	·431	·405	·397
Length of superior surface from occipital crest to anterior margin of nasal bones	·219	·207	·207
Breadth of skull across zygomatic arches	·179	·158	·160
Ditto between orbits	·098	·083	·098
Ditto across sinciput where narrowest in front of occipital crest	·020	·020	·024
Length of all the upper molar teeth taken together	·131	·128	·122
Ditto from hinder edge of bony palate to anterior margin of premaxilla	·260	·248	·262
Breadth of palate between anterior premolars	·054	·044	·050
Ditto ditto last molars	·036	·029	·032
Length of anterior palatine opening	·018	·017	·020
Breadth of ditto	·008	·0075	·006
Length of lower jaw	·315	·291	·305
Height of ditto	·140	·136	·136

Whether this form is the common pig of Turkestan or not I have no means of ascertaining; neither Severtzoff nor Prejevalski mention any peculiarities in the colour or structure of the wild swine noticed by them. The only Central Asiatic hog hitherto distinguished from *S. scrofa* is the *S. moupinensis* of A. Milne Edwards[1] from Eastern Tibet, and it is uncertain whether this is not Himalayan (*i. e.*, oriental) and not Tibetan.

Family—*BOVIDÆ*.

51. Ovis karelini.

Severtzoff, Turk. Jev., pp. 84, 86, 150, Pls. I, V, fig. 3, VI, figs. 3, 4;—Ann. Mag. Nat. Hist., Ser 4, xviii, pp. 171, 210, 217,—V. and B. Brooke, P. Z. S., 1875, p 512.

Ovis poli, Stoliczka, P Z. S., 1874, p. 425, Pl. LIII, *(figura mala)*, *nec* Blyth.

[1] Rech. Mam., I, p. 377, Pls. LXXX, LXXXI.

Wild sheep of Thian-Shan, Biddulph, P. Z. S., 1875, p. 157.
Ovis heinsi? W. Blanf., J.A.S.B., 1875, xliv, Pt. 2, p. 112, *nec* Severtzoff.
Kulja, Turki of Káshghar.
Ar or *Ghuljár*, ♂ ; *Arka (?Arkán)* ♀ ; Khirghiz.[1]

1-7, ♂, 8—11, ♀ ; skins, 12, skeleton, head wanting ; unlabelled, but apparently all from the mountain ranges north-west of Káshghar.

A large collection of specimens of the wild sheep inhabiting the mountains north-west of Káshghar was made by Dr. Stoliczka[2]; but after his death a considerable part of the collection, including all the finest specimens, was distributed with the consent of the Government, the greater portion becoming private property. The distribution was made with so little care and with so wanton a disregard of the interests of Government, to whom the collection belonged, and of Dr. Stoliczka's memory, that even the heads belonging to two skeletons, especially prepared, of *Ovis karelini* and *Capra sibirica*, were given away. There is reason to believe that two skulls of the true *O. poli* of the Pámir were brought away by Dr. Stoliczka, but both were removed from the collection before it reached the Indian Museum.

Of the seven male specimens of *O. karelini* remaining, none possesses a fine pair of horns ; but several of the skins are good and well preserved. When making out the list of species collected by Dr. Stoliczka, having only Severtzoff's untranslated work to refer to, I thought, judging by the figures alone, that the species might be that described by that naturalist as *O. heinsi ;* but Sir V. Brooke has since shown that the wild sheep, of which so many specimens were brought to Káshghar and presented to the Mission, is *O. karelini* of the same naturalist.

The following is a copy of Dr. Stoliczka's account of this sheep in the Proceedings of the Zoological Society. Dr. Stoliczka, it should be remembered, has naturally identified the animal with *O. poli*, as the difference between the two forms was then unknown—

" *Male, in winter dress.*—General colour above hoary-brown, distinctly rufescent or fawn on the upper hind neck and above the shoulders, darker on the loins, with a dark line extending along the ridge of the tail to the tip. Head above and at the sides a greyish-brown, darkest on the hind head, where the central hairs are from 4 to 5 inches long ; while between the shoulders somewhat elongated hairs indicate a short mane. Middle of upper neck hoary-white, generally tinged with fawn; sides of body and the upper part of the limbs shading from brown to white ; the hair becoming more and more tipped with the latter colour. Face, all the lower parts, limbs, tail, and all the hinder parts, extending well above towards the loins, pure white. The hairs on the lower neck are very much lengthened, being from 5 to 6 inches long. Ears hoary-brown externally ; almost white internally. Pits in front of the eye distinct, of moderate size and depth, and the hair round them generally somewhat darker brown than the rest of the sides of the head. The nose is slightly arched and the muzzle sloping. The hair is strong, wiry, and very thickly set, and at the base intermixed with scanty, very fine fleece ; the average length of the hairs on the back is from 2 to 2½ inches. The iris is brown. The horns are subtriangular, touching each other at the base, curving gradually with a long sweep backwards and outwards; and after completing a full circle, the compressed points again curve backwards and outwards ; their surface is more or less closely transversely ridged.

[1] Shaw (visit to High Tartary, Yarkand, and Káshghar, p. 425,) says the name of the male is *Arkár* and of the female *Goolja ;* but Dr. Stoliczka, Captain Biddulph, and Captain Trotter reverse the meaning of the terms. *Arkán* or *Arkár* is evidently the same word as *Argali*. Captain Trotter informs me that the correct names are those assigned above.

[2] In a private letter to me written from Kárghalik not many days before his death, Dr. Stoliczka told me he had despatched 22 skins of this sheep from Káshghar ; only 11 remain.

"The following are measurements taken from a full-grown male, though not the largest in the Mission collection :—

	Inches.
Total length from between the horns to tip of tail	62·
Length of head	13·25
Tail (including the hair at tip 1½ inches long)	5·5
Distance between snout and base of ear (the eye lies below this connecting line)	12·75
Distance between base of ear and the eye	3·25
Distance between snout and eye	8·5
Distance from the contact of horns to snout	12·
Breadth between the anterior angle of eyes	6·
Length of ear in front	4·75
Height of shoulder (the hair being smoothed, beginning from the edge of the middle of the hoof at the side)	44·
Girth round the breast	51·5
Length of one horn along the periphery	48·
Circumference of one horn at base	15·
Distance between the tips	38·

"The colour of full-grown females does not differ essentially from that of the males, except that the former have much less white on the middle of the upper neck. The snout is sometimes brown, sometimes almost entirely white, the dark eye-pits becoming then particularly conspicuous. The dark ridge along the tail is also scarcely traceable.

"In size, both sexes of *Ovis poli* appear to be very nearly equal; but the head of the female is less massive, and the horns, as in allied species, are comparatively small: the length of the horns of one of the largest females obtained is 14 inches along the periphery, the distance at the tips being 15 inches, and at the base a little more than 1 inch. The horns themselves are much compressed; the upper anterior ridge is wanting on them; they curve gradually backwards and outwards towards the tip, though they do not nearly complete even a semicircle.

"In young males, the horns at first resemble in direction and slight curvature those of the female, but they are always thicker at the base and distinctly triangular.

"The length of the biggest horn of a male along the periphery of curve was 56 inches, and the greatest circumference of a horn of a male specimen at the base, 18½ inches.

"Mr. Blyth, the original describer of *Ovis poli* from its horns, was justified in expecting, from their enormous size, a correspondingly large-bodied animal; but in reality such does not appear to exist. Although the distance between the tips of the horns seems to be generally about equal to the length of the body, and although the horns are very much larger, but not thicker than those of the *Ovis ammon* of the Himalayas, or equally massive, the body of the latter seems to be comparatively higher. Still it is possible that the *Ovis poli* of the Pamir may stand higher than the specimens described, which were obtained from the Thian-Shan range.

"Large flocks of *Ovis poli* were observed on the undulating high plateau to the south of the Chadir Kul, where grass vegetation is abundant. At the time the officers of the Mission visited this ground, *i. e.*, in the beginning of January, it was the rutting season. The characters of the ground upon the Pámir and upon the part of the Thian-Shan inhabited by these wild sheep are exactly similar."

I find from the skins preserved, that the dark mark above the tail is not constantly present even in males; in females Dr. Stoliczka notices that it is deficient. Some specimens are far more hoary, especially on the neck and flanks, than others.

All the skins of *Ovis karelini* obtained by Dr. Stoliczka appear to have been shot in winter. The animals from which they were taken were, I believe, brought down frozen to Káshghar.

The figure of this sheep in the P. Z. S. for 1874 is unfortunately far from accurate. The general colour is much too rufous; the crest along the back of the neck is entirely imaginary, and there is no black line along the back in any of the skins sent. The tail is so badly drawn, that the long hair of the left thigh appears to belong to it, and to represent a long bushy tail, the real tail, which is quite short, being indistinct. The white of the lower parts should be purer and should come further up the flanks; the horns are ill drawn. The original sketch was by Colonel Gordon, who informs me that the draughtsman who prepared the plate made several material alterations in the drawing.[1]

Excellent figures of this wild sheep and of its horns are given by Severtzoff (l. c.); a woodcut taken from Severtzoff's plate of the adult male is added to the last edition of Yule's Marco Polo.[2] There are good woodcuts of the horns and skull from a specimen procured by Captain Biddulph in Messrs. V. and B. Brooke's paper.

According to Severtzoff, *O. karelini* inhabits a large area in the Thian-Shan range north of Eastern Turkestan, and extends thence northward into the Semiretchinsk Altai and Saplisky Altai.

Sir V. Brooke observes that a specimen from near Káshghar sent to England by Colonel Gordon shows a very much greater extent of white on the lower sides and haunches than appears to have existed in either of Severtzoff's specimens.

52. Ovis poli.

Blyth, P. Z. S., 1840, p. 62; Ann. Mag. Nat. Hist., Ser. 1, vii, p. 195, Pl. IV, figs. 1, 2, 3, 4.—Gray, Cat. Mam. B. M., Ungulata Furcipeda, p. 165 (1852); Cat. Rum. Mam. B. M., p. 54 (1872).—Severtzoff, Turk. Jev., pp. 84-102, 149, Pl. II, III, V, figs. 1, 2, VI, fig. 1; Ann. Mag. Nat. Hist., 1876, Ser. 4, xviii, pp. 210, 220.—Biddulph, P. Z. S., 1875, p. 157. —V. and B. Brooke, P. Z. S., 1875, p. 514.—Marco Polo's travels, Yule's edition, 1871, i, p. 163; 2nd edition, 1875, i, pp. 18, 185.—Prejevalski, Pet. Mitt., Erg. hft., No. 53, pp. 5, 17; from Kulja, &c., pp. 45, 84.

Kutch-kar, Wood, Journey to Source of Oxus, p. 241 (edition of 1872).

Kuchkár, male, *mesh*, female,[3] in Wakhán (Trotter.)

As already stated in the notes on *O. karelini*, no specimens of this magnificent sheep remained in the collection made by Dr. Stoliczka when it was received by the Indian Museum, although from the accounts given by the natives who accompanied him, there can be no doubt that he brought away two heads from the Pámir. One of these was presented by Sir Douglas Forsyth to the East Indian Museum at South Kensington.

Fortunately four heads from the Pámir, brought back by different members of the Mission, appear to have been examined by Sir V. Brooke, and the dimensions are given in his paper. These heads were compared with the types originally named by Blyth and fully identified. The species was originally described from specimens obtained by Wood in his journey to the source of the Oxus. The heads from the Pámir are consequently typical.

It is far from certain whether Stoliczka noticed the differences between this sheep and *Ovis karelini*. He had, of course, no opportunity of comparing specimens. Only a single

[1] See P. Z. S., 1875, p. 540; 1876, p. 415.

[2] Edition of 1875, p. 186.

[3] Compare *gúch*, ram, *mish*, ewe; Persian for both wild and tame sheep.

female was killed on the Pámir; but if the skin was preserved, it was not added to the collection. Carriage was scarce at the time, and fewer specimens were taken than would have been the case under more favorable circumstances. Judging both from Stoliczka's diary and from Captain Biddulph's remarks in the Proceedings of the Zoological Society, the distinction between the two kinds of wild sheep was not recognized by any of the members of the Mission when on the Pámir, although all noticed the greater length of the Pámir horns. When Captain Biddulph had an opportunity of comparing heads of the two animals, he noticed the great difference in the curve of the horns as well as in their length.

It is unnecessary to point out the distinction between the two sheep at length: this has been done already by Dr. Severtzoff, and Messrs. V. and B. Brooke, in the papers quoted above. The differences in colouration are shewn by Severtzoff's figures and description to be trifling: *O. poli* has longer hair on the neck. The much greater length and greater divergence of the horns in *O. poli* are the most striking characters. In Dr. Stoliczka's notes there are measurements of one gigantic pair in which the right horn measured 65½ inches round the curve, the left horn 64, the distance from tip to tip of the horns was 53 inches, and the circumference of each horn at the base 16 inches. The curve varies somewhat, however. Thus, amongst the measurements given by Messrs. Brooke, in one skull, with horns 49 inches long round the curve, the tips are 49½ inches apart; in another, the original type described by Blyth, each horn measures 56 inches, but the distance between the tips is only 45, and similarly amongst the specimens brought by members of the Yárkand Mission, in the skull presented to the East Indian Museum by Sir D. Forsyth, the relative measurements are given as 55 and 43½, whilst in a specimen obtained by Captain Biddulph and measured by myself they are 51 and 49.

It may be as well to point out here, that the *O. poli* of Severtzoff is found considerably north and north-east of the Pámir in parts of the Thian-Shan range, north and north-east of Káshghar; that it is uncertain whether the animal inhabits the intervening tract, and that, so far as is known, no specimens from the two areas have been compared: only the skull and horns of the Pámir animal are known. It is most probable that the Thian-Shan race is identical with that found on the Pámir, but further comparison is desirable.

According to Severtzoff, *O. poli* ranges to the east of Lake Issyk, in the high plateaus around Han Tengri (Tengrikhan). It is not found further north, but Prejevalski met with it further east on the Juldus river. It is also included by Prejevalski in his list of animals occurring on the Altyn Tágh, south of Lob-nor[1]. Here again further comparison is desirable, as there is a possibility that some other race has been confounded with *O. poli*. Nothing was previously known of any wild sheep from the Kuenlun ranges, except the very distinct *O. nahura*, and Messrs. V. and B. Brooke have suggested[2] that the Argali of the Kuenlun mountains may be *O. brookei*.[3] If *O. poli* really inhabits the ranges north of Tibet and south of the Turkestan plain, the views expressed by Messrs. Brooke as to the distribution[4] of the Central Asiatic sheep of the Argali type will need modification. These naturalists suggest that the glacier system of the Kárákoram, or, in other words, the Mustágh range, forms a barrier between the areas inhabited by *O. poli* and *O. hodgsoni*.[5]

[1] Ante, p. 7.

[2] P. Z. S., 1875, p. 521.

[3] P. Z. S., 1874, p. 143.

[4] Tom. cit., p. 526.

[5] In the "Narrative of progress of Mission to Káshghar and back to India" published in the "Official Report," p. 69, *O. ammon* (i. e., *O. hodgsoni*) is said to be found on the Tibet border of Kashgharia about Tághdumbásh and Múztagh. Tághdumbásh is north of the Mústágh range.

The two other species of sheep described by Severtzoff from Western Turkestan, *O. heinsi* from near Tokmak, north of Lake Issyk, and *O. nigrimontana* from the Karatau or black mountains, north-east of the Syr or Jaxartes, are smaller forms, but apparently more nearly allied to *O. poli* and *O. karelini* than to any other species of wild sheep. It may not improbably be found that intermediate varieties occur, and that all these forms of wild sheep are merely races more or less completely differentiated. It should also be noticed that not only are these closely allied species distinguished on very small data, but that Dr. Severtzoff's ideas of specific distinction induce him to class apart forms which other naturalists do not separate.

The other known Central Asiatic wild sheep of the true Argali type, omitting doubtful forms, are *O. ammon*[1] (*vera=O. argali*,[2] Pall.) formerly inhabiting the Altai mountains and Dauria, but now supposed to be almost confined to part of Northern Mongolia, *O. jubata*[3] from north of Pekin, *O. hodgsoni*[4] (the *O. ammon* of Anglo-Indians generally) from the Tibetan plateau, and *O. brookei*,[5] of uncertain derivation, besides *O. nivicola*[6] from Kamtschatka, nearly allied to the American *O. montana*. *O. vignei*, *O. gmelini*, *O. cycloceros* and their allies form another group of species found in South-Western Asia and the Mediterranean area.

53. Ovis nahura, Pl. XIV.

O. nayaur, Hodgs., As. Res., xviii, Pt. 2, p. 135, partim.

O. nahoor, Hodgs., J. A. S. B., 1835, iv, p. 492.

O. burrhel, Blyth, P. Z. S., 1840, p. 67.—Ann. Mag. Nat. Hist., Ser. 1, vii, p. 248.—J. A. S. B., 1841, x, p. 868.

Ovis nahura, Hodgs., apud Gray, List. Spec. Mam. B. M. (1843), p. 170.

Pseudois nahoor, Hodgs., J. A. S. B., 1846, xv, p. 343.—Gray, Cat. Mam. B. M., Ung. Fur., p. 177 (1852).—Adams, P. Z. S., 1858, p. 527.—Prejevalski, Pet. Mitt., Erg. Hft., No. 53, pp. 5, 17.

Ovis nahura, Blyth, Cat. Mam. Mus. As. Soc., p. 178.—Jerdon, Mam. Ind., p. 296.

O. nahoor, A. Milne-Edwards, Rech. Mam., I, p. 357, Pl. LXVIII, LXIX.

1 ♂, near Tam, Sánju valley, Kuenlun range.

As pointed out by Jerdon, Blyth appears to have ultimately considered his *Ovis burrhel* identical with *O. nahura*, although at first he looked upon it as distinct on account of the darker colour and more rounded horns, but these differences are apparently due to age and season.

The name has been spelt in various ways—*nayaur*, *nahoor*, *nahur*, and *nahura*. I have adhered to the last, because it has been adopted by Jerdon and Blyth, and because *nayaur*, the oldest name, was corrected by Hodgson himself. I may add that the name appears to have been given altogether in error, for Hodgson in his original paper in the Asiatic Transactions, Vol. XVIII, Pt. 2, pp. 133, 134, states that the native name for the *Ovis ammon* is *bharal*, and for the smaller Himalayan sheep *nayaur*. In truth, the reverse is the case, as is well known, and Hodgson must have confounded the two. Perhaps it would be more convenient to drop

[1] Linn., Syst. Nat., 1766, Ed. xii, p. 97.
[2] Spic. Zool., fasc. xi, p. 21.
[3] Peters., Monatsber. K. Akad. Wiss. Berlin, 1876, p. 177, Pls. 1—4.
[4] Blyth, P. Z. S., 1840, p. 65.
[5] Ward, P. Z. S., 1874, p. 143.
[6] Esch., Zool. Atlas, p. 71, (1829.)

Hodgson's name altogether and adopt Blyth's *O. burrhel* for this wild sheep, but the spelling is very erroneous, and, on the whole, it appears as well to keep the name *nahura*.

In his original description, Hodgson figured and described the skull of a young *Ovis hodgsoni*, which he supposed to be that of the male of his *O. nayaur*, but the type of the latter species was a female which he had alive.

The only skin obtained from the Kuenlun by Dr. Stoliczka, that of a fine ram, represented on Plate XIV, closely resembles the animal found in Sikkim. It also agrees precisely with specimens from the North-West Himalayas.

The locality at which the Kuenlun *O. nahura* was obtained is beyond the previously known range of the animal. It has not hitherto been found further west; but Prejevalski obtained it on the Altyn-tagh, south of Lob Nor. According to Jerdon it is unknown in the Himalaya west of the Sutlej, and is replaced in Ladák and the neighbouring regions by *O. vignei*. This, however, is not quite correct. Adams has mentioned[1] that *O. nahura* is found in the Nubra valley in Northern Ladák, and I learn from Dr. Cayley that it is met with in most parts of Ladák, though it becomes rare to the westward, and that so far from being replaced by *O. vignei*, the two species are sometimes found occupying the same valleys.

The bharal has a considerable range to the eastward; it is common in Northern Sikkim, and it has recently been obtained by Père David in Moupin, and a specimen from that locality has been figured by A. Milne-Edwards, l. c. The plate represents a young male, but although the general colouration corresponds with that of the western Tibetan species, the curve of the horns appears somewhat different, for they rise more above the head in the Moupin animal.

54. Capra sibirica.

Meyer, Zool. Annal., I. 397, (1794)—Ehrenberg., Symb. Phys., dec. II, fol. mm.—Wagner, Schreber Säugth. v, pp. 1256, 1297 (1836)—Supp. Pt. iv, p. 490.—Gray, List Spec. Mam. B. M. (1843), p. 167.—Cat. Ung. Fur. (1852), p. 150.—Cat. Rum. Mam. (1872), p. 52.—Blyth, Cat. Mam. As. Soc. Mus., p. 176.—Jerdon, Mam. Ind., p. 292.—Severtzoff, Turk. Jev., p. 102; Ann. Mag. Nat. Hist., Ser. 4, xviii, p. 333.

Ibex alpium sibiricarum, Pallas, Spic. Zool., xi, p. 31 (1776).

Aigoceros ibex, Pall., Zoogr. Ros. As., i, p. 224.

Capra sakeen, Blyth, J. A. S. B., xi, 1842, p. 283.

Ægoceros skyn, Wagner, Schreb. Säugth. Supp. iv, p. 491 (1844).

Capra himalayana, Gray, Cat. Ung. Fur. B. M. (1852), p. 150.—Adams, P. Z. S., 1858, p. 523.

Capra skyn, Severtzoff, Turk. Jev., p. 102.—Ann. Mag. Nat. Hist., Ser. 4, xviii, p. 334.—Prejevalski, Pet. Mith., Erg. Hft., No. 53, p. 5. From Kulja, &c., p. 45.

Tekke, ♂ *Kaljúk*, ♀ Káshghar.

Rang ♂, *buz* ♀, Wakhán.[2]

1-3, ♂, heads, 4, 5, skins of young ♂, with horns, but without skulls; 6-8, ♀, skins with skulls; 9, skeleton, head wanting; (all without labels, except one female from Tám, Sánjú valley; the others are probably from the Thian-Shan range near Káshghar).

Of this animal, as in the case of *Ovis karelini*, all the best specimens appear to have disappeared from the collection, and there is not a single skin of an adult male. This is greatly

[1] P. Z. S., 1858, p. 527.

[2] I am indebted to Captain Trotter and Captain Biddulph for these names. The Káshghar name is from Dr. Stoliczka's diary.

to be regretted, for although horns abound in collections, perfect skins are exceessively rare, and there are none in Calcutta. I regret that for want of sufficiently good specimens I am unable to give a figure of this species.

It should be mentioned that Dr. Severtzoff and Colonel Prejevalski distinguish the true *Capra sibirica* of Siberia and North-Eastern Turkestan from *C. skyn* of the Himalayas, but the former states that his opportunities of comparison are insufficient to decide the question, and he appears chiefly to base his belief in the distinction of the two forms on the differences presented by the wild sheep of the same regions. Colonel Prejevalski refers the animal he met with on the Juldus ranges of the Thian-Shan east-south-east of Kulja to *C. skyn*, because the horns curve towards each other at their extremities, but *C. sibirica* may vary in this character as *C. ægagrus* does.

I have compared the female skins with Pallas' original description of the Siberian ibex, and am inclined to believe that they agree, but that the general colour of the Káshghar ibex is rather darker. The solitary (female) specimen from near Sánjú, south of Yárkand, has the anterior portions of the legs brown instead of black, but this appears due to immaturity.

The skin of an old female is dull greyish-brown above, the woolly under-fur being ash-grey, the longer hairs brown, with pale tips; there is a rudimentary dark streak down the hinder portion of the back. The ears are the same colour as the back, the edges dark-brown, the inner portion whitish. Head rather paler, owing to the pale tips of the hair being longer. There is a dark line round both lips, interrupted by a whitish spot at the front of the lower lip; the dark space is broader on the lower lip than on the upper, and on the latter there is a narrow pale line between the dark line and the lip. The breast is quite as dark as the back; lower parts, hinder portions of limbs, inner side of thighs and a narrow area below the tail, including the sides of the tail near the base, whitish, tail blackish-brown, front of all limbs down to the hoofs dark brown, almost black in parts, the black extending in a line up the front of the shoulder and thigh and being gradually lost. There is black hair all round the feet close to both the true and supplementary hoofs.

In younger animals the colour is paler, and the black marks in front of the legs are less distinct, especially near the hoofs.

In the only adult male head which retains the skin (the horns are 35 inches long round the curve), the beard is greyish-brown like the rest of the hair, not black; the hairs being eight inches long. The colour of this head is similar to that of the female.

Hayward[1] states that the ibex of the Kuenlun near Sánjú differs from that of Kashmir and resembles the "black ibex" of Baltistan. The horns, he adds, appear thinner and the knots are not so well defined as in the animals found in Kashmir and Ladák.

Capra sibirica is known to extend throughout a large area in Central Asia. It is common on the Pámir and in Wakhán,[2] and is probably found throughout the Hindu Kush, which, with the Thian-Shan ranges, must be its most western habitat. It extends throughout the inner portion of the Western Himalayas and the mountainous parts of Tibet, but it has not yet been obtained from the Eastern Himalayas, though I have heard of its occurrence in Tibet, north of Sikkim. To the northward it is found in the Altai and Sayansk mountains on the frontier of Siberia, south-west of Lake Baikal.

[1] Jour. Roy. Geog. Soc., 1870, XL, p. 69.

[2] Captain Biddulph tells me that he learned in Wakhán that some years since ibex existed there in great numbers, but that many died of a murrain which broke out, and the numbers are now less.

55. Gazella subgutturosa, *var.* yarkandensis. Pl. XV.

Antilope subgutturosa, Güld., Act. Acad. Petrop., i, p. 251.
Gazella subgutturosa, Brooke, P. Z. S., 1873, p. 545.
Kik[1] or *Saikik* and *Jairán*, Túrki of Yárkand and Káshghar.

1, 2, 3, 4, ♂, 5 ♀, 6 young ♀, Yárkand or Káshghar. No labels.

It is perhaps a question whether the Eastern Turkestan form of gazelle should not be raised to the rank of a species. It differs principally from the typical *G. subgutturosa* in the very much darker markings on the face and in the much smaller degree to which the horns diverge. The horns are very similar to those of a skull from Kándahár,[2] but much less openly lyrate than in a head from Isfahán, or in the type figured by Güldenstadt. The size appears rather larger than that of the Persian gazelle. But as there is some variation in face-markings amongst Persian specimens, it is perhaps better to consider the Yárkand race as only a variety.

The following is a description of the skins brought, all of which appear to have been killed in winter.

Horns approximate at the base, regularly but slowly diverging, and curving very slightly backwards till near the tips, where they are turned suddenly towards each other and forwards. There are rings on the horns nearly to the tips. The largest number of rings on any of the horns brought is 14. These horns are each $12\frac{1}{2}$ inches long measured round the curve.[3] No horns in the female. Hair long and rather coarse. The longest hairs on the back measure about 2 inches. The general colour above is rather light rufous-brown (fawn colour). The hairs are brown at the tips, pale lilac-grey below. There is no admixture of wavy woolly fibres with the hairs.

The pale lateral line[4] is distinct, but does not differ much in colour from the back, being only a little paler; the dark lateral band beneath it and the dark pygal bands are faint; abdomen and posterior inner portion of thighs white.

Long hairs round the base of the horns, and the central facial band of blackish-brown, light-brown and white mixed, there being a larger number of very dark hairs in front of the horns, and a more or less distinct blackish line from the anterior base of the horn, down each side of the central facial band, to a blackish spot about two-thirds of the distance from the base of the horns to the muzzle. Light facial streaks very distinct, dirty white; dark facial streaks well marked, mixed blackish-brown and light-brown, blackest just in front of the eye around the orifice of the anteorbital gland. Ears light-brown outside, tail blackish-brown; knee brushes variable, dark-brown more or less mixed with light-brown. There are some black hairs round the base of the hoofs and along the hinder portion of the feet between the true and supplementary hoofs.

[1] I learn from Captain Biddulph that Kik means "deer" in a very loose sense, being applied also to wild sheep. Saikik means desert deer, whilst Jairán is the correct name for gazelle. On the other hand, Captain Trotter tells me that Kik is used for the male, Jairán for the female.

[2] Figured in Geol. Zool. Abyssinia, Pl. 1, p. 4. This figure might almost have been taken from a pair of Yárkand horns.

[3] Since this was written, I have seen a much finer pair of horns belonging to Captain Biddulph and brought by him from Turkestan. They measure each 14 inches in length round the curve, the tips are $5\frac{1}{4}$ inches apart, and the circumference of each at the base 5 inches. They diverge nearer to the head than the other specimens do, and hence their curve agrees better with that of typical *G. subgutturosa*.

[4] For definition of the terms "lateral lines," "facial band," &c., see Sir V. Brooke, P. Z. S., 1873, p. 536.

The length of the skull in an old male is 8·5 inches, in an adult female 7·5. Ears between 5 and 6 inches long; vertebræ of the tail 5 inches; hairs at end 2.

This gazelle is doubtless that mentioned in Dr. Stoliczka's posthumous note "on the Avifauna of Káshghar in winter,"[1] under the name of *Antilope gutturosa*, and said to be found abundantly about Marálbáshi. It is also, I have very little doubt, the animal to which Shaw refers[2] as having been brought to him at Yárkand, and of which he says that the Yárkandi name is "Saikeek."

If I am correct in uniting the Yárkand gazelle to *Gazella subgutturosa*, the range of that species is very great. It is found throughout the highlands of Persia, though not in the neighbourhood of the Persian Gulf. It extends along the western coast of the Caspian to near Bákú and is found about Tabriz. It occurs at Kándahár, Bokhára, and throughout Western Turkestan,[3] and, it now appears, east of the Pámir, so that it may be found close to the range of *G. gutturosa*.

56. Pantholops hodgsonii. Pl. XVI.

Antilope hodgsonii, Abel, Edin. Jour. Sc., 1827, p. 163.

A. (*Oryx*) *kemas*, Ham. Smith, Griffith's Cuv. An. King., v, p. 328 (1827).

Antilope chiru, Less., Man. Mam., p. 371 (1827).

Antilope hodgsonii, Hodgs., Gleanings in Science, i, p. 144 (1829).—Ib. ii, p. 348, Pls. III, V, (1830).—P. Z. S., 1830, p. 52, &c.—J.A.S.B., i, p. 59, Pl. IV (1832).—Ib. iii, p. 134.—Hooker's Himalayan Journals, ii, pp. 132, 157, and woodcut, p. 158 (1854).

Pantholops hodgsonii, Hodgs., P.Z.S., 1834, p. 81.—J.A.S.B., xii, 1843, Plate issued with No. 135.—Wagner, Schreb. Säugth., Supp. iv, p. 420 (1844)— Ib. v, p. 402 (1856).—Gray, Cat. Mam. B. M. Ungulata Furcip., p. 53 (1852)—Cat. Rum. Mam. B. M., p. 33 (1872).—Adams, P.Z.S., 1858, p. 521.

Kemas hodgsonii, Gray, List Spec. Mam. B.M., p. 157 (1843).—Ann. Mag. Nat. Hist., 1846, xviii, p. 231.—Blyth, Cat. Mam. As. Soc., p. 173 (1863).—Jerdon, Mam. Ind., p. 282 (1867).—W. Blanf., J.A.S.B., 1872, p. 39.

1 ♂, Kium, Ladák; 2 ♀, no label.

The Chirú appears to have been described in the same year by Abel, Hamilton Smith, and Lesson. I have only access to the two last-mentioned. This species was subsequently well and thoroughly described by Hodgson from the living animal, and the same naturalist in 1834 proposed a new genus *Pantholops* from "the vulgar old name for the unicorn."

In 1843 Gray called this antelope *Kemas hodgsonii*, and the generic name was adopted by Blyth in the Catalogue of Mammals in the museum of the Asiatic Society, and has been generally used in India, although Gray in later catalogues corrected his former mistake.

The genus *Kemas* was originally proposed by Ogilby in 1836, the type being[4] the Goral (*Antilope goral*, Hardwicke). The generic name has been wrongly applied to the Chirú by Gray and Blyth, and again misapplied by Gray to the wild goat of the Nilgiris (*Hemitragus hylocrius*, Ogilby sp.), neither of which is congeneric with the Goral. Ogilby certainly

[1] Stray Feathers, 1874, ii, p. 216.
[2] High Tartary, Yarkand, and Káshghar, p. 221.
[3] See P. Z. S., 1873, pp. 313, 546. Severtzoff, Turk. Jev., p. 62.
[4] P. Z. S., 1836, p. 138.

included the Nilgiri goat in his genus *Kemas*,[1] but this was in a subsequent paper to that in which he gave the characters of the genus and named the Goral as the type.

Hodgson's antelope has been variously classed by different authors, but there can be but little doubt that Hodgson was right in considering it closely allied to the Gazelles. The form of the feet with their very pointed hoofs strongly supports this view.

The following detailed measurements of a female are from Stoliczka's notes:—

	Inches.
Length from nose to between ears	10
„ from between ears to top of shoulder	14
„ „ top of shoulder to base of tail	26
„ of tail without tuft	4·5
„ „ with tuft	7
Total length from nose to tip of tail	53
Length of ear from front base	5·8
„ „ orifice to tip	4·3
„ „ hind base	4·8
Median breadth of ear	2·5
Girth round the breast	35
Height at shoulder	27·5 (?37·5)
Length of fore-leg	18
„ „ from knee	10·4
„ hind-leg „	24
„ „ from hock to toe	11·5
Height at the hind-feet	31
From nose to eye	5·8
„ eye to base of ear	2·5
Height of nose with lower lip	3·2

Pantholops hodgsoni appears to be common throughout Tibet from the neighbourhood of Lhassa to Ladák. It is found in the Kuenlun range, but has not been met with further to the north-west or west. It was not found by Père David in Eastern Tibet or in Mongolia.

In Mr. Shaw's work,[2] the head of this antelope is figured by mistake as that of the "Keek;" *Gazella subgutturosa*, var. The mistake was made by the publisher of the book in Mr. Shaw's absence.[3]

Family—*CERVIDÆ*.

57. Cervus eustephanus.

W. Blanf., P. Z. S., 1875, p. 637.

? Cervus maral (C. canadensis var.*)*, Severtzoff, Turk. Jev., pp. 62, 103.—Ann. Mag. Nat. Hist., Ser. 4, xviii, p. 377.—Prejevalski, Pet. Mitt., Erg. Hft., No. 53, p. 5.—From Kulja, &c., p. 46.

? C. maral, var. *asiatica, b. songarica*, Severt., Turk. Jev., p. 109; Ann. Mag. Nat. Hist., t. c., p. 386.

Cervus cornibus magnis sublævigatis, valde curvatis, superne subplanulatis, subpalmatisque, apices versus convergentibus atque retro productis, ramos ad septem gerentibus, duobus

[1] P. Z. S., 1837, p. 81.

[2] High Tartary, &c., pp. 168, 169.

[3] I am indebted to Captain Trotter and Captain Biddulph for this information.

primis subæqualibus approximatis, tertio paullo minore, quarto maximo, basin versus planulato, tribus ultimis gradatim diminuentibus.

1 pair of loose horns without label said to have been purchased in Káshghar.

The loose horns appear to me to indicate a new stag. They have apparently been shed, and they probably belonged to different animals. They are of large size, each measuring 51 inches in length round the curve, one is 10·9, the other 10·5 inches in circumference at the base, just above the burr. Each shows 7 well-formed tines, so that the animal must have had 14 points. The beam is very much curved, and, so far as it is possible to judge from the form of the burr, the horns must bend somewhat towards each other at the tips and branch apart less than in most stags. The brow antler and bez are close together, the former slightly exceeds the latter in length, and the bez is rather longer than the royal. The greatest peculiarity of the horns, however, is in the form of the crown. Above the royal the beam curves inwards and gives out an anterior tine which is much the largest of all, and slightly compressed, being only a little shorter, and scarcely smaller, than the beam itself. Above this the beam gives out two other tines, each successively diminishing in length, and all these four branches, that is, the beam itself and the three upper tines, are in nearly the same plane, so that by looking at the horn with either the beam or the great fourth tine in front, the remainder of the crown can be concealed behind either one or the other.

The nearest approach to these horns in form with which I am acquainted may perhaps be found in a pair figured by Severtzoff in his Turkestanskie Jevotnie, p. 105, under the name of *Cervus maral*. The number of tines is similar, and there is some resemblance in their form and in the manner in which the beam curves backwards above the royal. The horns figured come from the Thian-Shan. But in Severtzoff's figure, the brow and bez-antlers are much farther apart, the beam appears less curved inwards above the royal, and the tendency to palmation in the crown is wanting, whilst the lowest of the four points composing the crown scarcely exceeds the two next in size.

The horns of *C. eustephanus* differ widely from those of *Cervus maral* represented in the Transactions of the Zoological Society, Vol. VII, p. 336, Pl. XXIX. The curve of the beam in the present stag is greater, the brow and bez-antler closer together, and different in proportion and direction, and the crown is very dissimilar.

On comparing the Thian-Shan horns with those of *Cervus cashmirianus*[1] and *C. affinis*,[2] even greater differences will be noticed. The Turkestan horns are smoother, and curved backwards towards the tip; the brow and bez-antler are closer together, and the form of the crown is totally distinct. Indeed in *C. affinis* there are said never to be more than two points at the tip of each horn above the royal. At the same time the horns of *C. eustephanus* closely approach those of *C. affinis* in the great curve of the beam.

Whatever Mr. Hodgson's *Cervus narayanus*, founded upon a single immature horn (figured J. A. S. B., 1851, xx, Pl. VIII, and described, p. 392) may be, it is evidently something very different, its great peculiarity being the great distance apart of the basal tines.

It appears to me that as regards the horns, the Thian-Shan stag approaches the Wapiti more than any Asiatic deer. The resemblance between the Asiatic stags and *Cervus canadensis* has been discussed by many naturalists, and by none more fully than by Mr. Blyth,[3] who has

[1] Falconer, Pal. Man., i, p. 576.
[2] Hodgson, J. A. S. B., 1841, x, p. 721.
[3] J. A. S. B., 1853, xxii, p. 592; 1861, xxx, p. 185, &c.

pointed out that the most important characters in which the horns of the American stag differ from those of the animals found in Eastern Tibet, Kashmir, and Persia are the smoothness of the former, their tendency to flattening or palmation in the crown, their greater subdivision in the coronal region, and the marked backward curvature and want of convergence in the upper portion of the beam. Now in all these characters the horns brought from Turkestan appear to be intermediate between those of the other Asiatic stags and those of the Wapiti. The horns of the Turkestan stag differ from those of the Wapiti in being less smooth, more curved inwards towards the ends, and in having the brow and bez-antler much nearer together, but they are much nearer to the Wapiti horns than they are to those of *C. cashmirianus* or *C. affinis*.

There can, I think, be very little doubt that *Cervus eustephanus* is the animal described by Severtzoff and Prejevalski as inhabiting the forests of the Thian-Shan and neighbouring ranges. It is a very large animal, as indeed is evident from the dimensions of the horns, adults being, according to Severtzoff, as much as 6 feet high at the shoulder. It is probably known as *maral* by the Arian tribes of Central Asia, the word being Persian for deer. The true *C. maral*, however, inhabiting the forests on the southern coasts of the Caspian and in the Caucasus, &c., is a much smaller animal with, as already noticed, differently shaped horns.

I have no definite information as to the history of the pair of horns described, except that Captain Trotter informs me they were purchased in Káshghar bazar, and were said to have been brought from the forests of the Thian-Shan mountains east of Kulja. Another and larger pair were also brought by the mission, but they were presented to Lord Northbrook and sent by him to England, so I have had no opportunity of examining them. I am informed, however, by Mr. Wood-Mason that they differed considerably from the pair examined by me, and that the terminal portion was greatly flattened.

Since this account of *C. eustephanus* has been written, I have learned that these horns from the Thian-Shan have been examined by Sir V. Brooke and pronounced, if I understand correctly, to belong to some species already described, probably *C. canadensis*. The details, however, have not reached me.[1]

58. Cervus sp.

Cervus maral, Prejevalski, Pet. Mitt. Erg. Hft., No. 53, p. 9.—From Kulja, &c., p. 166.

No specimen of the large deer found in the woods and thickets of Eastern Turkestan was, so far as I know, brought back by the Yárkand Mission. The animal is mentioned in the "General description of Káshghar"[2] near the commencement of the published "Report," thus, under the head of "Animals."

"The stag or *búghú* male, and *marál* female, haunts the forest borders along the river courses on the mid plain, and is hunted for its antlers, which are an article of commerce with China."

The same animal is mentioned, and by the same names, by Captain Biddulph, in the narrative of his visit to Marálbáshi,[3] and is said to inhabit a belt of thick high grass on the banks of rivers.

Almost all the information I have on this deer is derived from Mr. Shaw. All whom I have asked agree that it is a different animal from the great stag of the Thian-Shan. Mr.

[1] Just as the last proof was being passed, I received Sir V. Brooke's paper, P. Z. S., 1878, p. 883, and find, p. 912, that he considers the horns undistinguishable from some of *C. canadensis*.

[2] By Dr. Bellew. Report of a mission to Yárkand in 1873, p. 69.

[3] Report, p. 218.

Shaw procured a head which, however, he did not bring to Calcutta, but of which he has given me a photograph. This is not large enough to show all the characters in detail, but it represents a pair of horns with 10 tines, five on each horn; the two terminal tines subequal, brow and bez close together, and in these characters, as well as in size and form, the horns much resemble those of *C. affinis*.

59. Capreolus pygargus.

Cervus pygargus, Pallas.

1, a pair of horns attached to the skin, without label, but probably from Káshghar.

A pair of small horns, without any skull, covered with very thick "velvet" and attached to each other by the skin of the forehead, agree fairly with the figure of those of *C. pygargus*.

Explanation of the Plates.

Plate I. Fig. 1, *Sorex* (*Crocidura*) *myoides*, p. 16.
„ 2, *Erinaceus albulus*, p. 14.

Plate I*a*. „ 1, skull of *Erinaceus albulus*, from above; 1*a*, from below; 1*b*, from the side; 1*c*, 1*d*, 1*e*, 1*f*, teeth of a younger animal, natural size.
„ 2, skull of *Sorex* (*Crocidura*) *myoides*, from above, natural size; 2*a*, the same from the side, enlarged 3 diameters; 2*b*, upper teeth and palate; 2*c*, lower jaw and teeth, both enlarged 3 diameters.
Figs. 3, 3*a*, 3*b*, skull of *Mustela stoliczkana*, 3 views, natural size.

Plate I*b*. *Felis shawiana*, p. 17.

Plate I*c*. *Felis shawiana*, skull; 3 views, all natural size.

Plate II. *Canis* (*Vulpes*) *flavescens*, 2 vars., p. 22.

Plate II*b*. *Mustela stoliczkana*, p. 30.

Plate III. Fig. 1, *Lepus hypsibius*, p. 60.
„ 2, *L. pallipes*, var., p. 62.

Plate IV. „ 1, *L. yarkandensis*, p. 65.
„ 2, *L. tibetanus*, p. 63.

Plate IV*a*. Figs. 1, 1*a*, 1*b*, skull of *Lepus hypsibius*, 3 views, all natural size.
„ 2, 2*a*, 2*b*, skull of *L. yarkandensis*, 3 views, all natural size.

Plate V. Fig. 1, *Lepus pamirensis*, p. 67.
„ 2, *L. stoliczkanus*, p. 68.

Plate V*a*. Figs. 1, 1*a*, 1*b*, skull of *Lepus pamirensis*, 3 views, all natural size.
„ 2, 2*a*, 2*b*, skull of *L. stoliczkanus*, 3 views, all natural size.

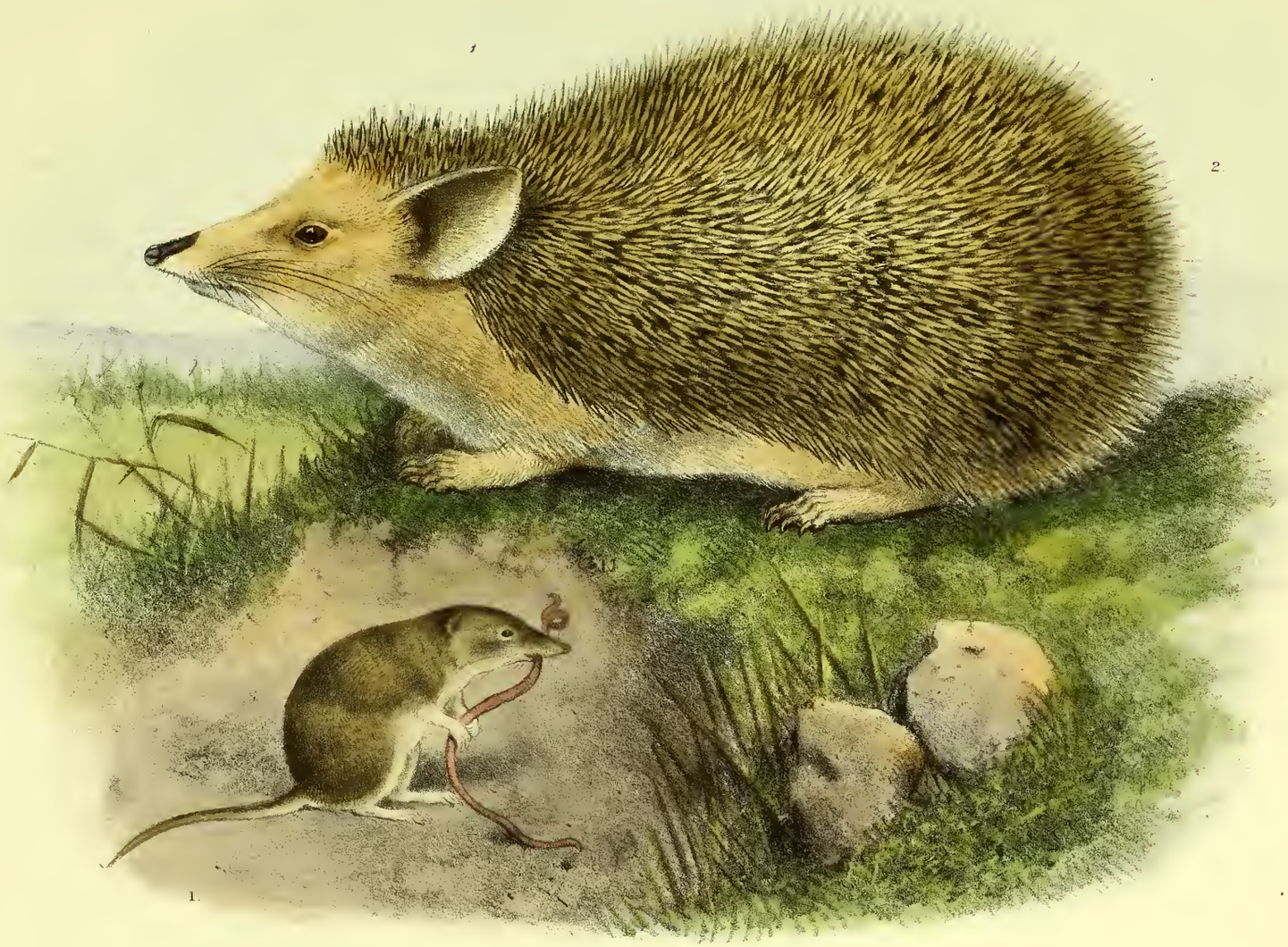
Plate VI. Fig. 1, *Lagomys ladacensis*, p. 71, in winter dress.
„ 2, *L. auritus*, p. 74.

Plate VII. „ 1, *Lagomys griseus*, p. 77.
„ 2, *Lagomys ladacensis*, in summer dress.

Plate VII*a*. Figs. 1, 1*a*, 1*b*, skull of *Lagomys ladacensis*, 3 views, all natural size.
„ 2, 2*a*, 2*b*, skull of *L. auritus*, 3 views, all natural size.
„ 3, 3*a*, 3*b*, skull of *L. griseus*, 3 views, all natural size.

Plate VIII. Fig. 1, *Arvicola stoliczkanus*, p. 42.
„ 2, *A. blythi*, p. 39.

PLATE VIII*a*. *Nesokia scullyi*, p. 49.
PLATE IX. Fig. 1, *Cricetus fulvus*, p. 45.
„ 2, *Mus pachycercus*, p. 53.
PLATE X. *Gerbillus cryptorhinus*, p. 56.
PLATE X*a*. Figs. 1, 1*a*, 1*b*, skull of *Nesokia barclayana*, p. 46, 3 views; 1*c*, 1*d*, lower jaw, all natural size; 1*e*, right upper molars, 1*f*, right lower molars, both enlarged 2 diameters.
„ 2, 2*a*, 2*b*, skull of *N. scullyi*, 3 views, 2*c*, lower jaw, all natural size; 2*d*, right upper molars, 2*e*, right lower molars, both enlarged 2 diameters.
PLATE X*b*. „ 1, 1*a*, 1*b*, skull of *Arvicola blythi*, 3 views, natural size; 1*c*, right upper molars, 1*d*, right lower molars, both enlarged 4 diameters.
Fig. 2, right upper molars of *Arvicola stoliczkanus*, enlarged 4 diameters; 2*a*, lower molars similarly enlarged.
Figs. 3, 3*a*, 3*b*, skull of *Cricetus fulvus*, 3 views, natural size; 3*c*, incisors, from the front, natural size; 3*d*, upper molars, 3*e*, lower molars, both enlarged 4 diameters.
Fig. 4, skull of *Mus pachycercus* from above, natural size; 4*a*, 4*b*, two views of the same enlarged two diameters.
Figs. 5, 5*a*, 5*b*, skull of *Gerbillus cryptorhinus*, 3 views, natural size; 5*c*, upper molars, 5*d*, lower molars, both enlarged 2 diameters.
PLATE XI. *Arctomys aureus*, p. 33.
PLATE XI*a*. Skull of *Arctomys aureus*, 3 views, natural size.
PLATE XII. *Arctomys himalayanus*, p. 36.
PLATE XII*a*. Skull of *Arctomys himalayanus*, 3 views, natural size.
PLATE XIII. *Arctomys caudatus*, p. 37.
PLATE XIII*a*. Skull of *Arctomys caudatus*, 3 views, natural size.
PLATE XIV. *Ovis nahura*, p. 85.
PLATE XV. *Gazella subgutturosa*, var. *yarkandensis*, p. 88.
PLATE XVI. *Pantholops hodgsoni*, p. 89.



1. SOREX MYOIDES.
2. ERINACEUS ALBULUS.

Plate I *a*.

1.

1 *b*.

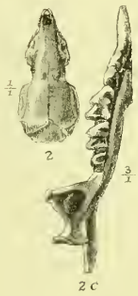
1 *a*.

1 *c*.

1 *f*

1 *e*.

1 *d*.

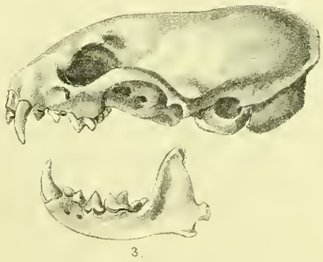


2 *c*

2 *a*.

2 *b*.

3 *a*.



3.

3 *b*.

J. Schaumburg Lith.

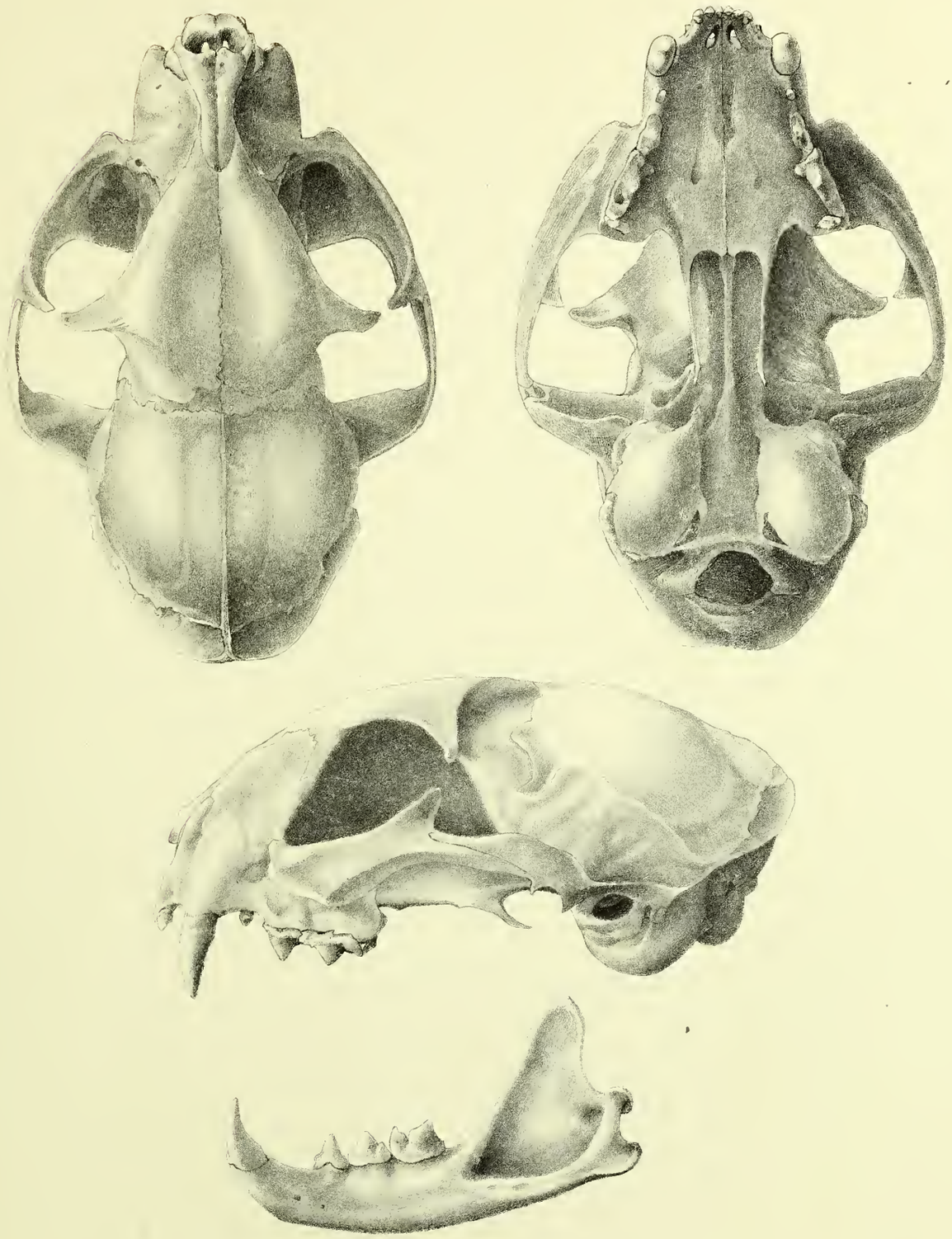
S. Seagfield imp.

1 ERINACEUS ALBULUS.
2 CROCIDURA MYOIDES.
3 MUSTELA STOLICZKANA.

J.Smit lith.

Hanhart imp

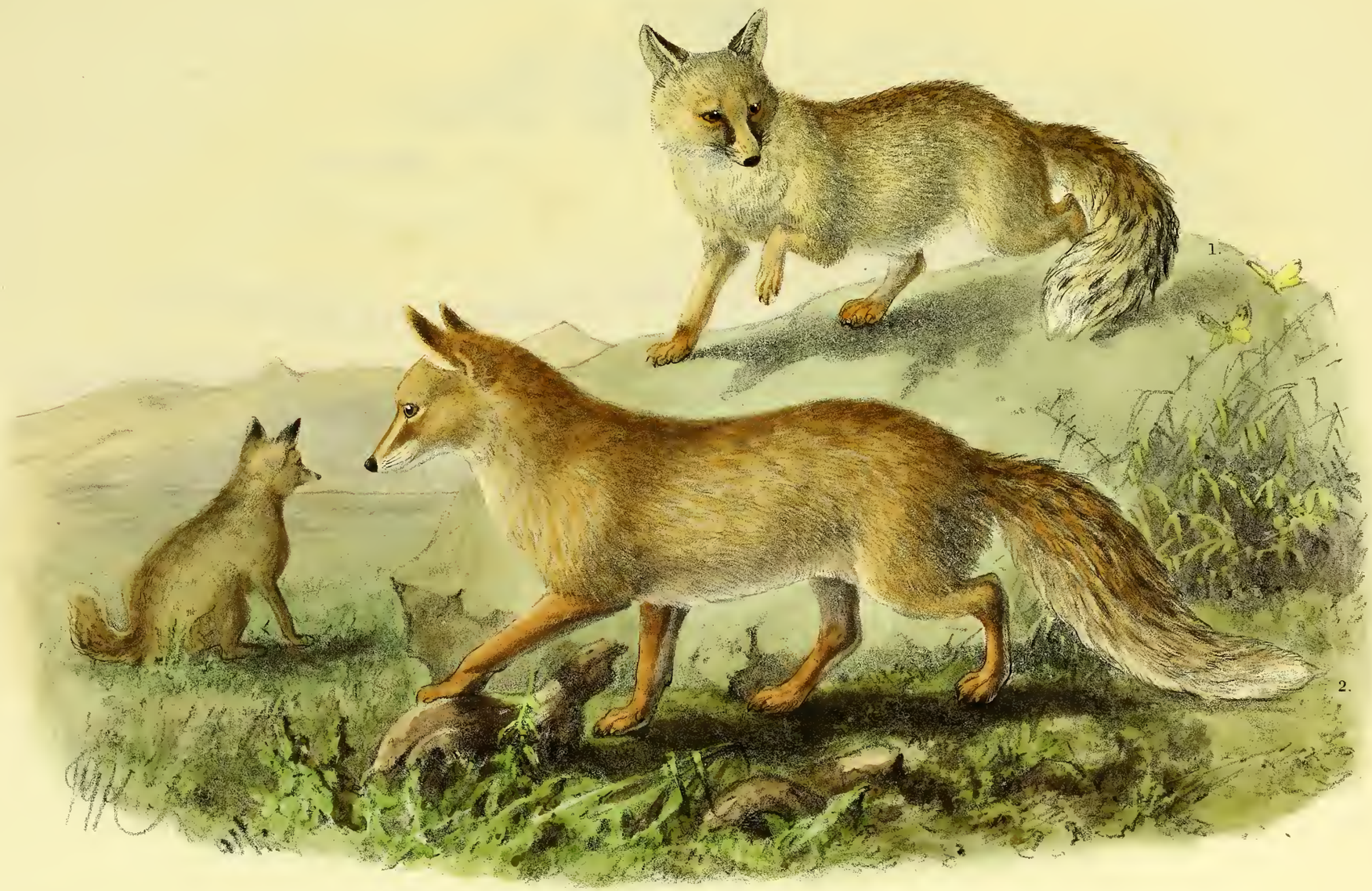
FELIS SHAWIANA



Kahlúdin Ahmed del

Maclure & Macdonald, Lith

FELIS SHAWIANA.



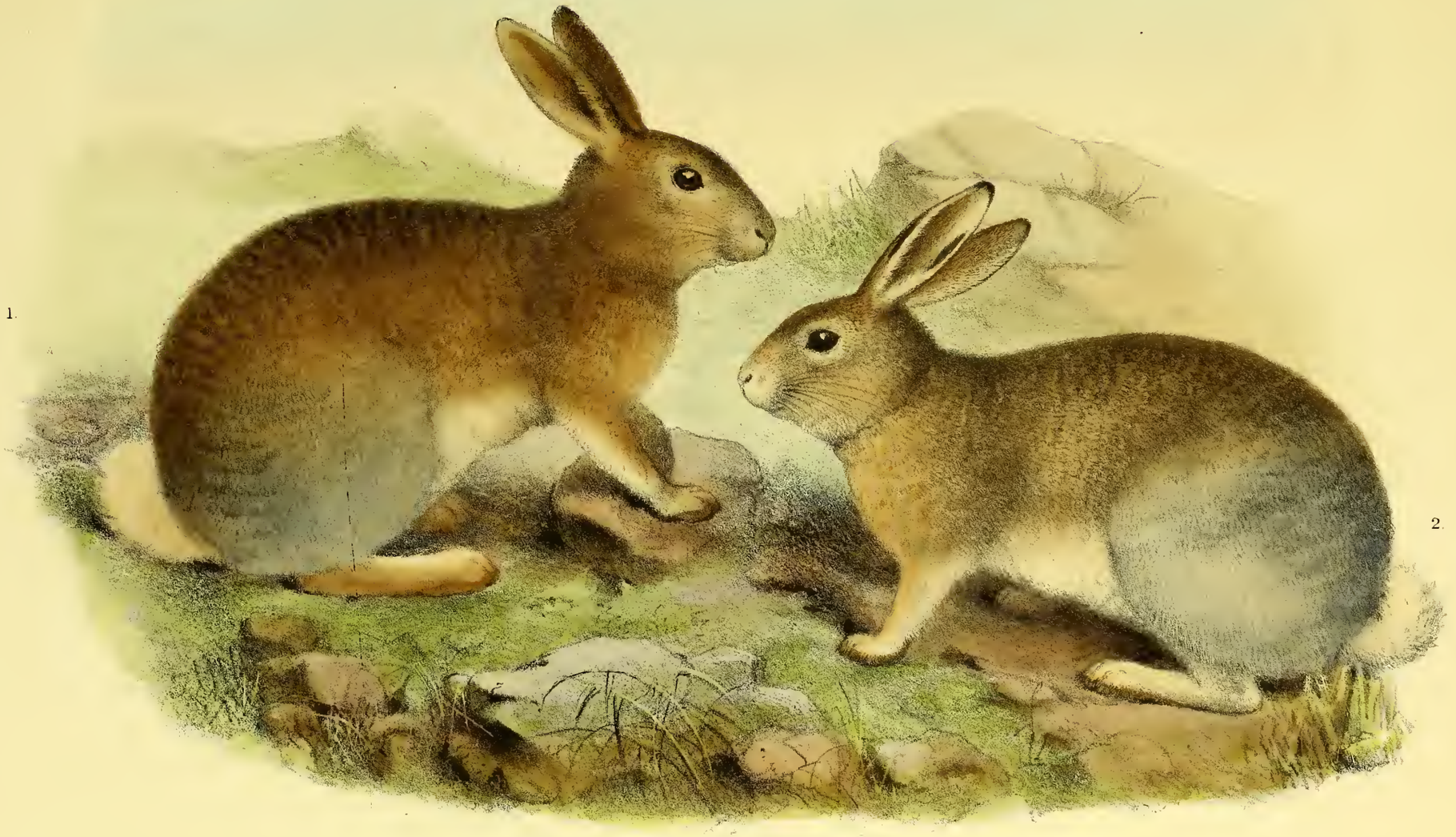
J.G Keulemans.

Mintern Bros imp

1 CANIS (VULPES) MONTANUS.
2. . . . . *Var.* FLAVESCENS

J Smit lith

MUSTELA STOLICZKAN...



J. Smit del.

Mintern Bros imp.

1, LEPUS HYPSIBIUS, 2, LEPUS PALLIPES, *var.*

1.

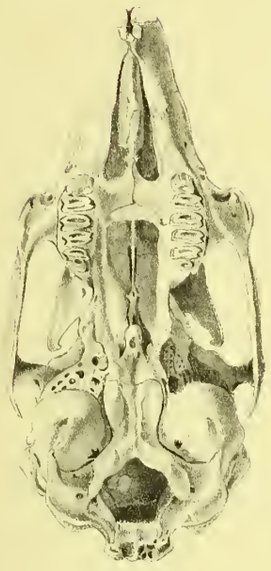
2.

J. Smit del. et lith.

1, LEPUS YARKANDENSIS. 2, LEPUS TIBETANUS.

Mintern Bros. imp.

Plate IV*a*.

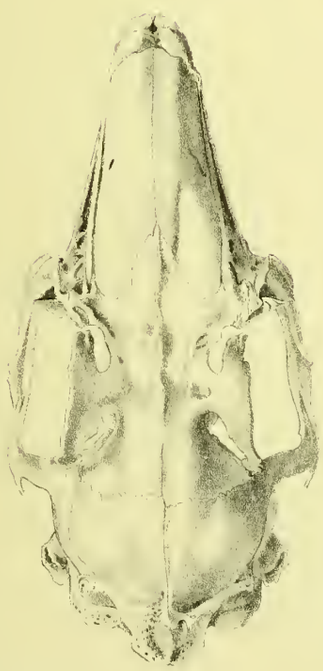


2 *a*.

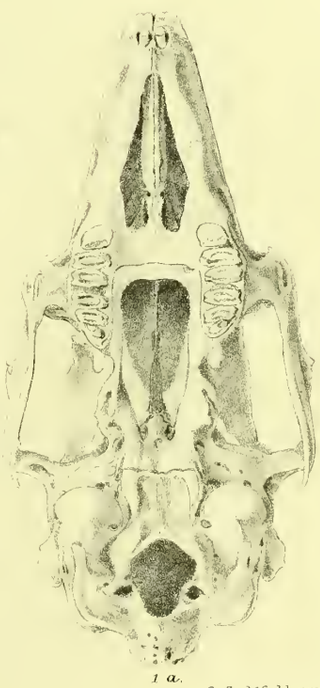
2.

2 *b*.

1.



1 *b*.



1 *a*.

J. Schaumburg Lith.

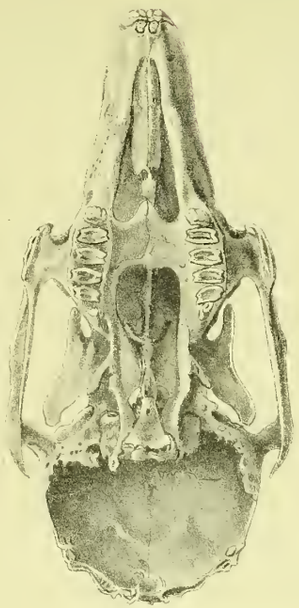
S. Sedgfield imp.

1. LEPUS HYPSIBIUS.
2. LEPUS YARKANDENSIS.

J.G.Keulemans del.

Mintern Bros imp.

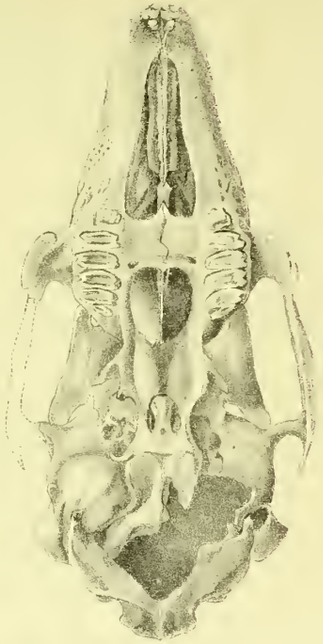
1. LEPUS PAMIRENSIS.
2. ,, STOLICZKANUS.



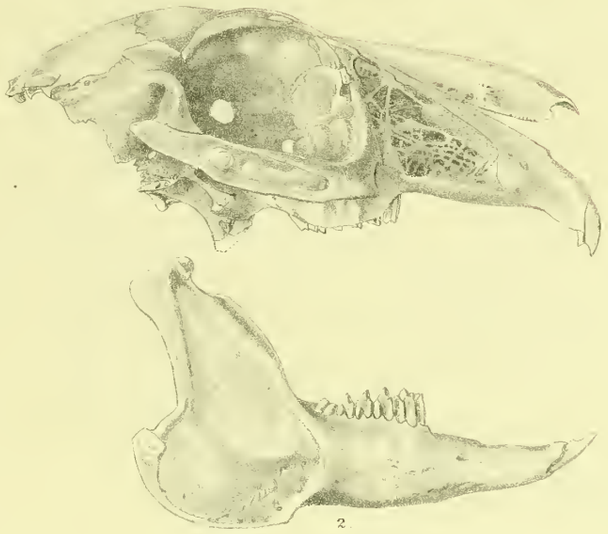
2 *b*

2 *a*

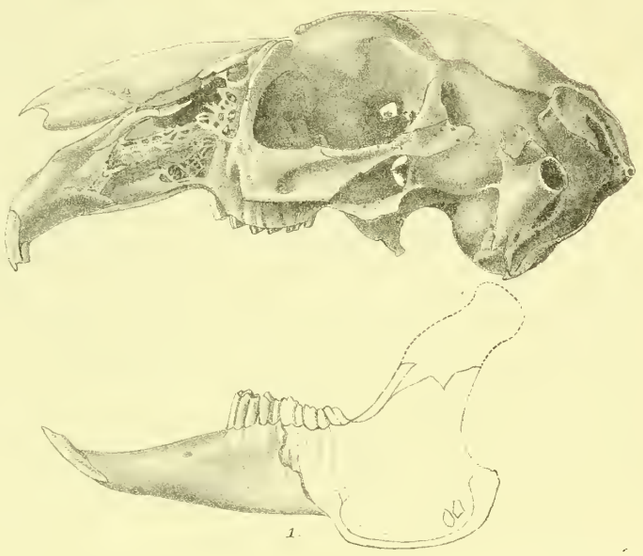
1 *b*



1 *a*



2



1

J. Schaumburg Lith.

S. Sedgfield, imp:

1. LEPUS PAMIRENSIS.
2. L. STOLICZKANUS

J.G Keulemans.

Mintern Bros. imp.

1. LAGOMYS LADACENSIS.
2. L. AURITUS.

J.G.Keulemans del.

Mintern Bros. imp

1. LAGOMYS GRISEUS.
2. L. LADACENSIS.

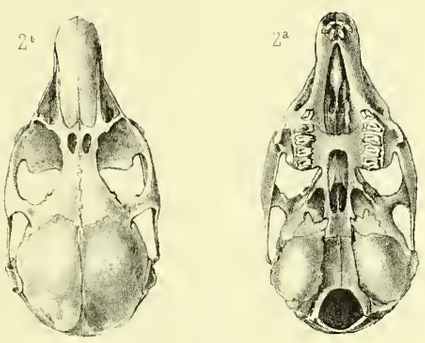
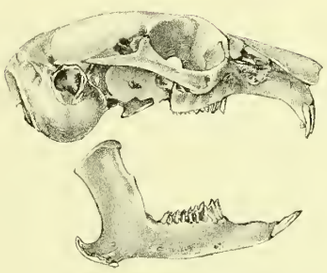


Fig. 2.



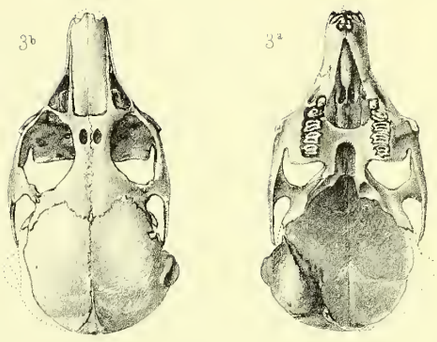


Fig. 3.

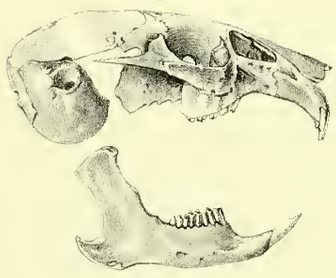
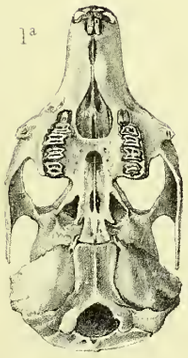
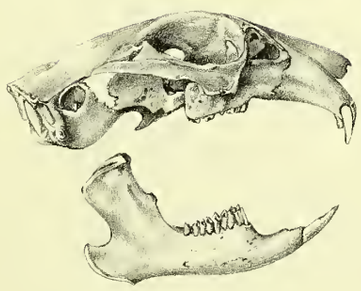


Fig. 1





Kahludin Ahmed, del.

1. LAGOMYS LADACENSIS.
2. ,, AURITUS.
3. ,, GRISEUS.

Maclure & Macdonald, Lith.

J. G. Keulemans

Mintern Bros. imp

1. ARVICOLA STOLICZKANUS.
2. ARVICOLA BLYTHI.

J.Smit lith.

Hanhart imp

NESOKIA SCULLYI

J.G.Keulemans.

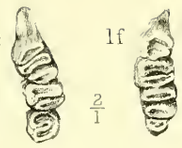
Mintern Bros. imp.

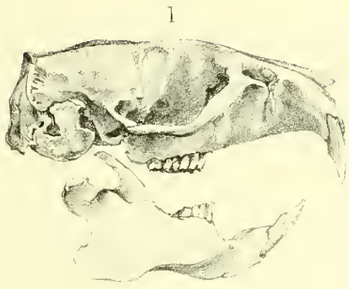
1. CRICETUS FULVUS.
2. MUS PACHYCERCUS.

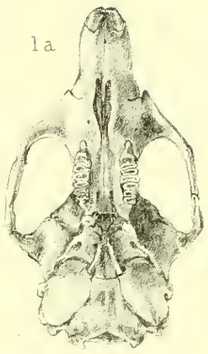
J.G.Keulemans.

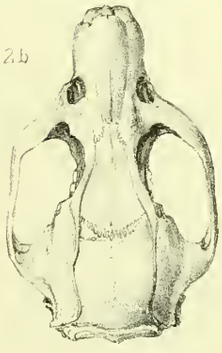
Mintern Bros. imp.

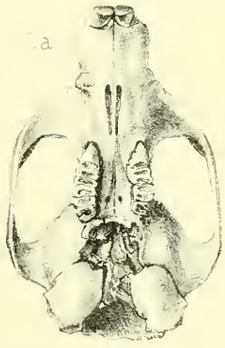
GERBILLUS CRYPTORHINUS.











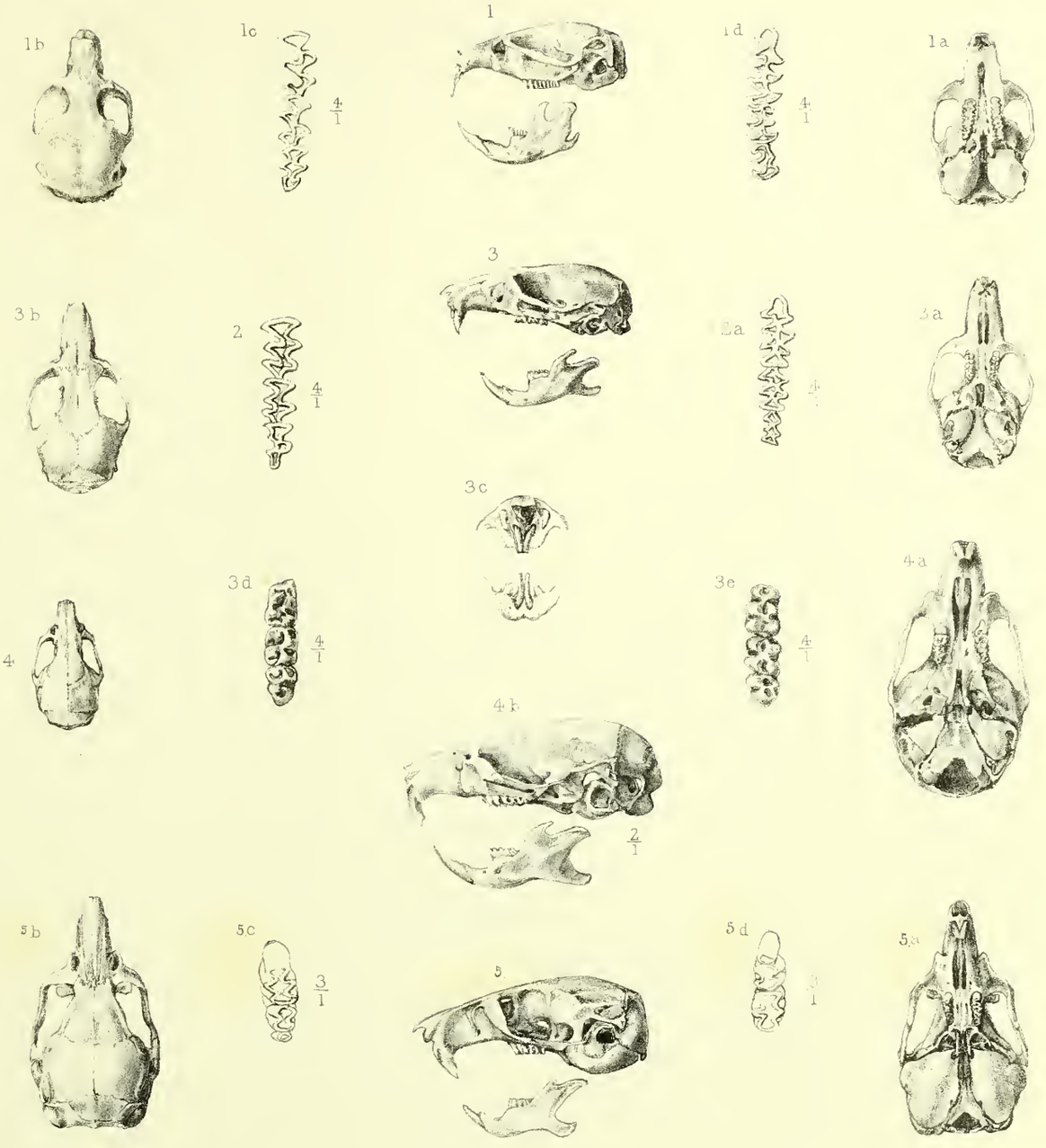
Bihari Lal Das, del.

H.H. Godwin Austen, lith.

Maclure & Macdonald Imp.

1. NESOKIA BARCLAYANA.

2. N. SCULLYI.



Bekari Lal Das del
HH Godwin-Austen Lith.

Maclure & Macdonald Imp

1. ARVICOLA BLYTHI. 3. CRICETUS FULVUS.

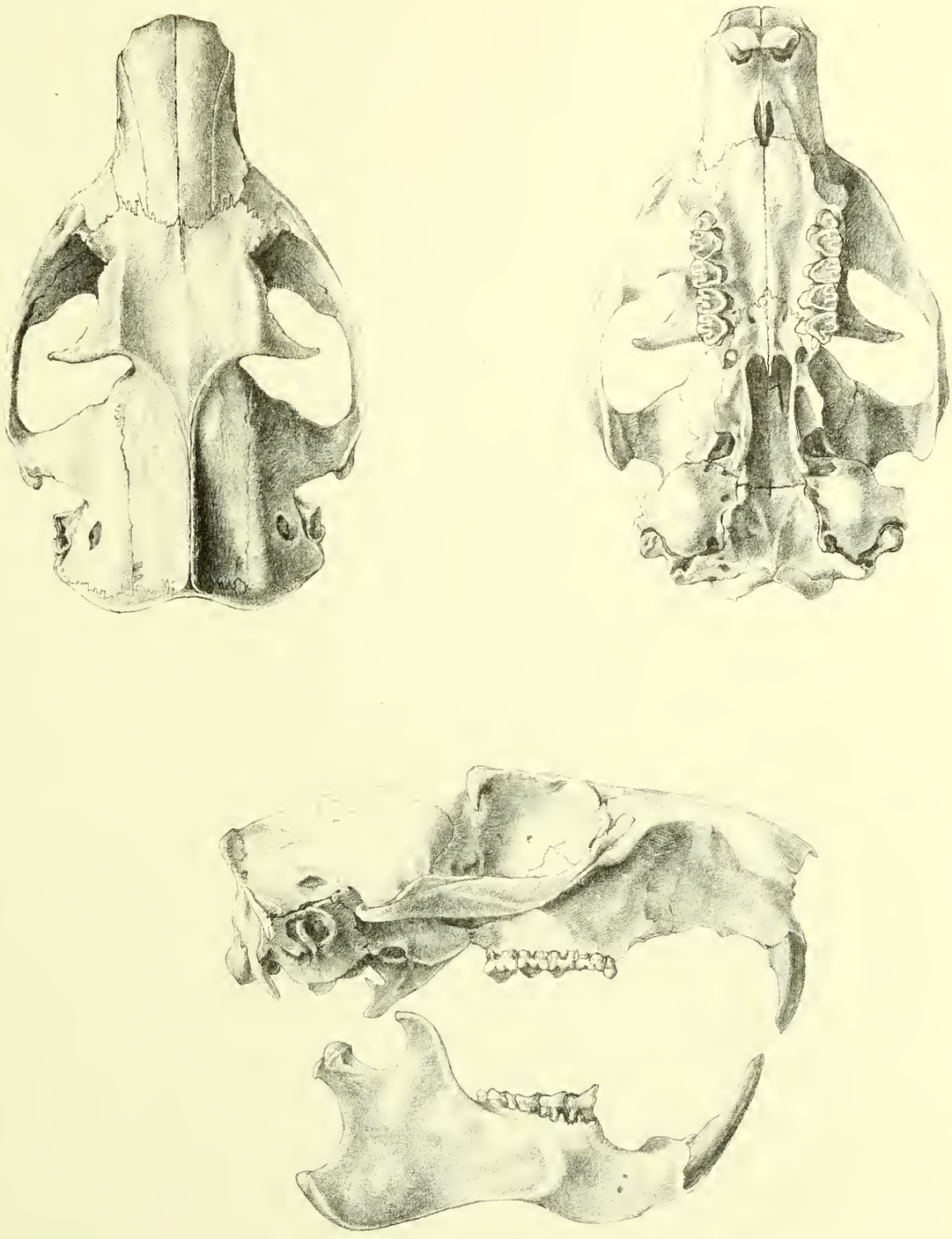
2. „ STOLICZKANUS. 4. MUS PACHYCERCUS

5. GERBILLUS CRYPTORHINUS.

T. Smit del. et lith.

ARCTOMYS AUREUS.

Mintern Bros. imp.



Bekari Lal Das del.
H.H.Godwin-Austen lith.

Madden & Malcolmson Imp.

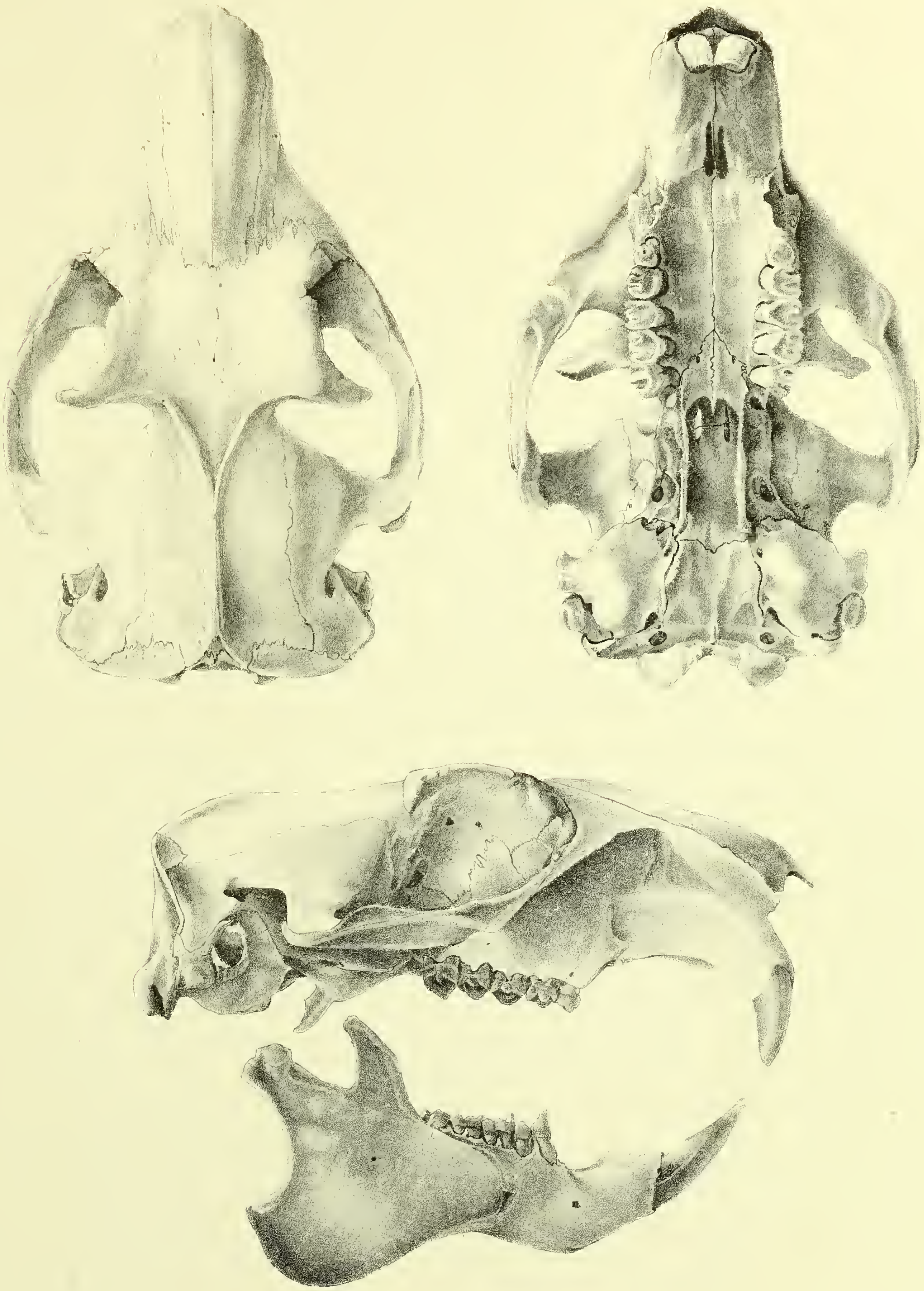
ARCTOMYS AUREUS

T. Smit del. et lith.

ARCTOMYS HIMALAYANUS.

Mintern Bros. imp

Plate XIIa



Behari Lal Das, del.

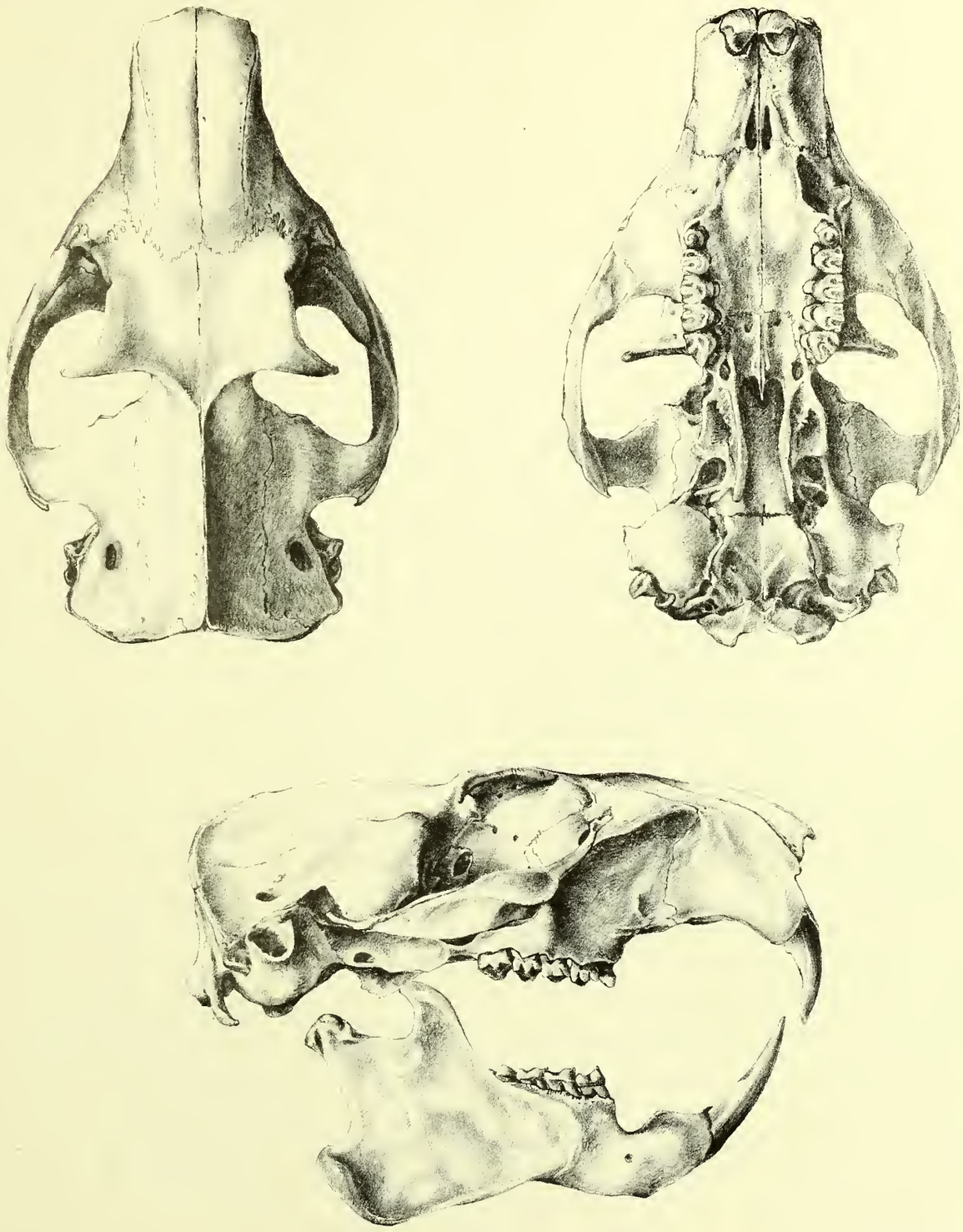
Maclure & Macdon[illegible]

ARCTOMYS HIMALAYANUS

Mintern Bros. imp.

J. Smit del. et lith.

ARCTOMYS CAUDATUS.



Behari Lal Das, del.
H.H. Godwin Austen, lith.

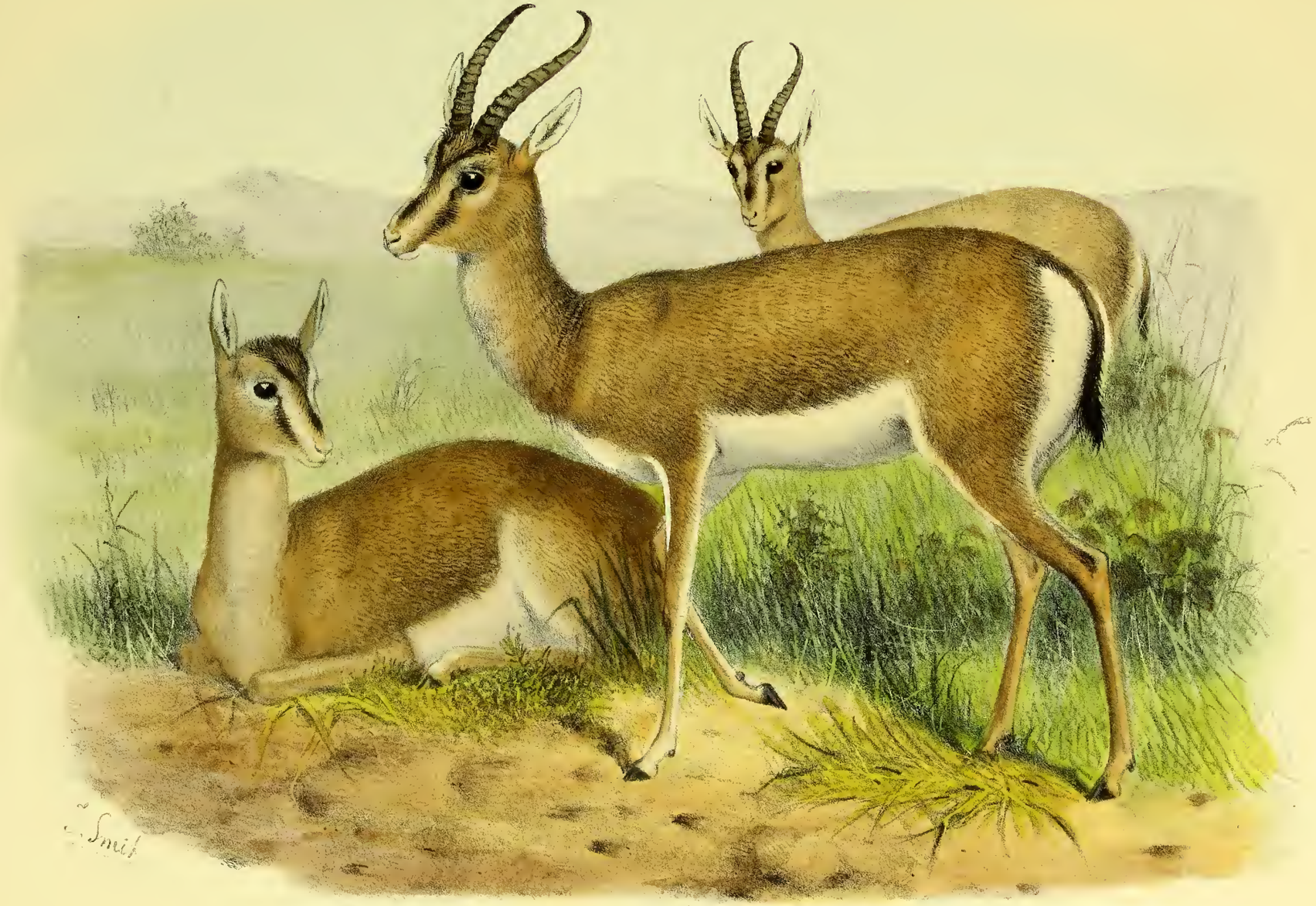
Maclure & Macdonald, imp.

ARCTOMYS. CAUDATUS.

J. Smit del et lith.

Mintern Bros. imp.

OVIS NAHURA.



T. Smit.

Mintern Bros. imp.

GAZELLA SUBGUTTUROSA, *var.*. YARKANDENSIS. ♂ & ♀.

J. Smit del.

Mintern Bros. imp.

PANTHOLOPS HODGSONI, ♂ & ♀.

SCIENTIFIC RESULTS

OF

THE SECOND YARKAND MISSION;

BASED UPON THE COLLECTIONS AND NOTES

OF THE LATE

FERDINAND STOLICZKA, PH.D.

AVES,

BY

R. BOWDLER SHARPE, LL.D., F.L.S., F.Z.S., &c.

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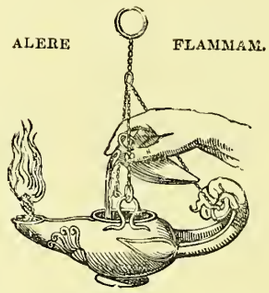

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SCIENTIFIC RESULTS

OF

THE SECOND YARKAND MISSION.

AVES.

By R. BOWDLER SHARPE, F.L.S., F.Z.S., &c.,

ZOOLOGICAL DEPARTMENT, BRITISH MUSEUM.

IT is much to be regretted that by a series of untoward circumstances this report on the ornithological collections formed by the late Dr. Ferdinand Stoliczka has been so long delayed. The work would have been done by my friend Mr. Allan Hume, and indeed *was* done by him, but during the rebuilding of a portion of his museum at Simla the whole of the MSS., together with other valuable MSS. work of Mr. Hume's, was stolen by a dishonest servant and sold as waste-paper in the bazaar. I therefore brought the collection over with me to England with the rest of the Hume Collection, and but for an unwonted pressure of official work which has fallen to my lot ever since my return from India, I should have completed this report long ago.

By this delay a great injustice has been unavoidably done to the memory of that sterling naturalist Dr. Stoliczka, for the material which he collected was abundant and the series of skins ample. Had he lived to write up his own notes, it is certain that this report would have been one of the most interesting ever published on the birds of Central Asia, but I have done my best to extract from his diary all the notes which appear to me to be of interest to ornithologists. I have gone further in my endeavour to make the present report as useful as possible after the lapse of years which has ensued, and I have included in the list of birds all the species that were obtained by Dr. Henderson and Dr. Scully and recorded in the notes published by those gentlemen. Colonel Biddulph, who was attached to the same expedition as Stoliczka, gave a series of notes in MSS. to Mr. Hume, and these, having luckily escaped the fate which overwhelmed the rest of the MSS., have been incorporated here. The present work, therefore, is an attempt to monograph the labours of the English Expeditions into

Central Asia, and as such will, I think, be useful for future reference. The papers relating to the avifauna of the neighbouring countries of Central Asia have also been consulted and quoted, but it must be understood that I have only endeavoured to reproduce the information which affects the zoo-geographical relations of the ornithology of Eastern Turkestan. Space has not been available for the reproduction of all the interesting notes on the habits and breeding of the species with which the works of Dr. Henderson and Dr. Scully teem, neither have I been able to quote at length the valuable critical remarks published by Mr. Hume in 'Lahore to Yarkand.' These works must therefore be consulted at all points by the student, as also the excellent introduction which Mr. Hume has written in the latter work, to which I feel I can add nothing of importance.

I have to acknowledge the assistance I have received in the determination of the specimens from my colleague Mr. W. R. Ogilvie Grant; and also from Mr. C. Chubb, who has sacrificed much of his time in helping me with the preparation of the synonymy.

Order ACCIPITRES.

Suborder FALCONES.

Fam. VULTURIDÆ.

Genus **VULTUR.**

1. Vultur monachus.

Vultur monachus, L.; Hume, Rough Notes, i. p. 1 (1869); Sharpe, Cat. B. Brit. Mus. i. p. 3 (1874); Scully, Str. F. iv. p. 116 (1876); Dresser, Ibis, 1875, p. 98; Prjev. in Rowley's Orn. Misc. ii. p. 139 (1877); Menzbier, Orn. Turkest. (Severtz. Coll.), p. 2 (1888).

Vultur cinereus, Severtz. Turkest. Jevotn. p. 62 (1873); Zarudn. Ois. Transcasp. p. 31 (1885); Radde, Ornis, iii. p. 466 (1887).

Dr. Scully states that this Vulture is found, though rarely, in the hills bordering Eastern Turkestan, and a few stragglers are occasionally seen in the plains. The Turki name is "Salwar."

Fam. FALCONIDÆ.

Subfam. *ACCIPITRINÆ.*

Genus **CIRCUS.**

2. Circus cyaneus.

Circus cyaneus (L.); Sharpe, Cat. B. Brit. Mus. i. p. 52 (1874); Scully, Str. F. iv. p. 125 (1876); Bidd. Ibis, 1881, p. 42; Scully, ibid. p. 421; Severtz. Ibis, 1883, p. 54; Homeyer & Tancré, MT. orn. Ver. Wien, 1883, p. 82; Scully, J. A. S. Beng. lvi. p. 77 (1887); Sharpe, Trans. Linn. Soc. (2) Zool. v. part 3, p. 66 (1889).

Strigiceps cyaneus, Severtz. Turkest. Jevotn. p. 63 (1873); Dresser, Ibis, 1875, p. 109; Prjev. in Rowley's Orn. Misc. ii. p. 154 (1877); Zarudn. Ois. Transcasp. p. 34 (1885); Radde, Ornis, iii. p. 472 (1887).

No. 950. Bora, November 4, 1873.—Length 18·25 inches, wing 13·6, tail 9·0, tarsus 2·8; expanse 41·0. Iris golden; bill dark horny; feet golden. Wings reach within 2 inches of end of tail. [Young bird.]

No. 1065. Yarkand, November 21, 1873. "Ach-sā." [An adult male.]

No. 1069. Yarkand, November 21, 1873. "Kara-sā = young of the grey bird." [Young bird.]

Colonel Biddulph writes:—"We found this bird very common all over the more cultivated portions of Yarkand from Karghalik. We never met with it in the desert-tracts, such as those between Yarkand and Kashghar, nor at any elevation in the hills. We saw it the whole time we were in the country from November to May." Specimens were procured by Colonel Biddulph at Maralbashi in January 1874, and at Yangihissar on the 1st of December 1873.

Dr. Stoliczka's diary notes this Harrier as not uncommon near Yarkand in November 1873.

Dr. Henderson does not appear to have met with the species, but Dr. Scully has the following note:—"The Hen-Harrier is a permanent resident in the plains of Kashgharia and breeds there; the nest is said to be placed in long grass jungle. I often observed this bird sailing low, over rush-grown marshes and bare fields, with a wonderfully long-sustained flight.

It never seems to tire, and always appears keenly intent on looking for its prey, every now and then suddenly dropping down among the reeds, as if shot, but soon rising again to resume its hunting. The male bird is called by the Yarkandis 'Kok Sā' (the Blue 'Sā'), and the female 'Kilati Sā,' the word *Sā* being a sort of generic name applied to all Buzzards, Kites, and Harriers, an added second word (usually having reference to colour or shape) marking the species."

In his paper on the birds of the Pamir Range the late Dr. Severtzow says that the Hen-Harrier was seen by him during its migration near the Kara-Kul lake, and was found on the Alai. Immature birds were rather common.

3. Circus æruginosus.

Circus æruginosus (L.); Sharpe, Cat. B. Brit. Mus. i. p. 69 (1874); Scully, Str. F. iv. p. 126 (1876); Blanf. East. Persia, ii. p. 110 (1876); Bidd. Ibis, 1881, p. 43; Scully, ibid. p. 422; C. Swinh. Ibis, 1882, p. 100; Severtz. Ibis, 1883, p. 54; Homeyer & Tancré, MT. orn. Ver. Wien, 1883, p. 82; Scully, J. A.S. Beng. lvi. p. 78 (1887); Radde, Ornis, iii. p. 472 (1887); Sharpe, Trans. Linn. Soc. (2) Zool. v. part 3, p. 66 (1889).

Circus rufus, Severtz. Turkest. Jevotn. p. 63 (1873); Dresser, Ibis, 1875, p. 109; Zarudn. Ois. Transcasp. p. 23 (1885).

No. 727, ♀ juv. Tanksi, September 17, 1873.—Length 21·5 inches, wing 16·3, tail 9·5, tarsus 3·45; expanse 51·0. Iris brown; bill horny black, cere greenish or yellowish green. Closed wing reached within 2 inches of end of tail. [A young bird.]

No. 1021. Yarkand, November 13, 1873. [An interesting specimen emerging from the young into the adult plumage by a moult.]

No. 1528, ♂. Panjah, April 20, 1874.—Length 20·6 inches, wing 16·0, tail 9·5, tarsus 3·6; expanse 51·0. Iris golden; bill bluish black, cere greenish yellow; feet yellow, claws horny black.

Hunting around swamp about 4½ miles west of Panjah with another specimen quite similar to this one. Both often sat down among the high reeds in the swamp, perhaps making their nest among the reeds. [A fully adult male.]

Dr. Scully writes:—"The Marsh-Harrier is tolerably common in Eastern Turkestan, where it is often seen during the summer hunting over the long rushes and reeds which grow in marshy ground or on the banks of lakes. It was never seen in winter. This species is said to feed chiefly on frogs, rats, and lizards; occasionally also on the Reedling (*Calamophilus biarmicus*). It breeds in Kashgharia, where it is called by the natives *Akbash Sā*, the White-headed 'Sā.'"

Dr. Severtzow, during his exploration of the Pamir, found the Marsh-Harrier during migration near the Kara-Kul in the beginning of September. It was also seen near Ran-Kul in the middle of August; probably young ones come to the Pamir in summer.

4. Circus macrurus.

Circus macrurus (Gm.); Sharpe, Cat. B. Brit. Mus. i. p. 67 (1874); Scully, J. A. S. Beng. lvi. p. 78 (1887).

Strigiceps pallidus, Severtz. Turkest. Jevotn. p. 109 (1873); Zarudn. Ois. Transcasp. p. 24 (1885).

Circus swainsonii, Dresser, Ibis, 1875, p. 109; Scully, Str. F. iv. p. 125 (1876).

Circus pallidus, Homeyer & Tancré, MT. orn. Ver. Wien, 1883, p. 83.

Dr. Scully believes that he saw this species at Kichik Yailak (12,054 feet) on the 19th of August, but failed to hit the bird. The Kirghiz called it "Boz Sā" (the Grey 'Sā').

Genus **ASTUR.**

5. Astur palumbarius.

Astur palumbarius (L.); Severtz. Turkest. Jevotn. p. 63; Dresser, Ibis, 1875, p. 104; Scully, Str. F. iv. p. 121 (1876); Prjev. in Rowley's Orn. Misc. ii. p. 153 (1877); Homeyer & Tancré, MT. orn. Ver. Wien, 1883, p. 82; Zarudn. Ois. Transcasp. p. 25 (1885); Radde, Ornis, iii. p. 472.

Dr. Scully gives an interesting account of the training of the Goshawk for hawking in Central Asia. He says that it is said to live principally near the hills in the neighbourhood of Aksu, and only visits Yarkand about the beginning of winter, when it is supposed to be following the migrating water-fowl. The Turki name is "Karchighah."

Genus **ACCIPITER.**

6. Accipiter nisus.

Astur nisus (L.); Severtz. Turkest. Jevotn. p. 63 (1873); Homeyer & Tancré, MT. orn. Ver. Wien, 1883, p. 82; Radde, Ornis, iii. p. 471 (1887).

Accipiter nisus (L.); Sharpe, Cat. B. Brit. Mus. i. p. 132 (1874); Scully, Str. F. iv. p. 122 (1876); Dresser, Ibis, 1875, p. 104; Blanf. East. Persia, ii. p. 109 (1876); Prjev. in Rowley's Orn. Misc. ii. p. 153 (1877); Wardl. Ramsay, Ibis, 1880, p. 47; Bidd. Ibis, 1881, p. 41; Scully, ibid. p. 409; C. Swinh. Ibis, 1882, p. 99; Scully, J. A. S. Beng. lvi. p. 78 (1877); Zarudn. Ois. Transcasp. p. 25 (1885).

No. 1127. Kashghar, December 10, 1873.

An adult female, identified by Mr. Hume as *A. nisus*, and not as his *A. melaschistus*. This identification I agree with, as it is not dark enough for the latter species.

No. 829. Upper Karakash, October 1873.

Colonel Biddulph states that he met with *Accipiter melaschistus* in the Sindh valley, but the true *A. nisus* he procured at Sháhidula on the 21st of October, and again in Wakhan.

Dr. Scully observes:—"The Sparrow-Hawk is found in great numbers in the hills south of Yarkand, where it breeds. It visits the plains in considerable numbers in the beginning of winter. It is rather prized for hawking, and is trained to capture Larks, Quail, and Pigeons (*C. œnas*); in the hills it is said to hunt Chicore. Two specimens were preserved at Kashghar in November and December, and I have seen others procured from the Karchung valley in May. The Turki name for the Sparrow-Hawk is 'Karghai.'"

Subfam. *BUTEONINÆ.*

Genus **BUTEO.**

7. Buteo plumipes.

Buteo plumipes, Hodgs.; Sharpe, Cat. B. Brit. Mus. i. p. 180 (1874); Bidd. Ibis, 1881, p. 42; Scully, ibid. p. 421; Menzbier, Orn. Turkest. p. 185 (1889).

Buteo japonicus, Scully, Str. F. iv. p. 125 (1876).

No. 1404, ♂. Ighiz Yar, March 21, 1873.—Length 20 inches, wing 16·5, tail 9·4, tarsus 3·0; expanse 52·0. Iris dark brown; bill dusky bluish, cere yellow; feet yellow. Turki name "Sā."

This specimen is in the uniform black plumage which is generally assigned to the adult of *B. plumipes*, and I believe it to be of that species. The size of the foot is one of my chief characters for this determination, although it will be noticed that the length of the tarsus (as measured by Dr. Stoliczka) does exceed the limit of 2·9 inches allowed by Mr. Hume as the maximum for *B. plumipes* ('Rough Notes,' p. 271).

Dr. Stoliczka writes in his diary:—"At Ighiz Yar I also shot a *Buteo*, apparently *B. plumipes*, which I had formerly seen several times, but could not get a shot at. It is a very wary bird."

Dr. Scully shot three females at Yarkand in January. He gives the measurements and soft parts. According to him, it is "common near Yarkand during the winter. A dark specimen was called 'Kara Sā,' the Black *Sā*, but this species was really not discriminated from the preceding species (*B. ferox*). *B. plumipes* was never met with in the plains after the winter was fairly over."

Dr. Scully also records the Common Buzzard (*Buteo vulgaris*) as common during the winter in the neighbourhood of Yarkand; but the Hume Collection did not contain a specimen, and I rather question the identification.

8. Buteo ferox.

Buteo ferox (Gm.), Sharpe, Cat. B. Brit. Mus. i. p. 176, pl. 8 (1874); Blanf. East. Persia, ii. p. 113 (1876); Scully, Str. F. iv. p. 124 (1876); Wardl. Rams. Ibis, 1880, p. 47; Bidd. Ibis, 1881, p. 42; Scully, ibid. p. 420; C. Swinh. Ibis, 1882, p. 99; Severtz. Ibis, 1883, p. 53; Zarudn. Ois. Transcasp. p. 26 (1885); Scully, J. A. S. Beng. lvi. p. 78 (1887); Radde, Ornis, iii. p. 470; Sharpe, Trans. Linn. Soc. (2) Zool. v. pt. 3, p. 66 (1889); Menzbier, Orn. Turkest. p. 204 (1889).

Buteo leucurus, Severtz. Turkest. Jevotn. p. 63 (1873); Dresser, Ibis, 1875, p. 103.

Buteo aquilinus, Hume & Henders. Lahore to Yark. p. 175 (1873).

Ad. Yarkand, November 8, 1873.
No. 1172. Kashghar, December 21, 1873. "Sā."
No. 1406. Ighiz Yar, March 22, 1874.
No. 1729. Kizil, May 19, 1879.

Dr. Henderson procured a specimen of the sooty form of this Buzzard at Dhurmsala, near Saidábád, on the road from Kashmir to the plains.

Mr. Hume gives some notes on the plumages of the species.

Dr. Scully shot specimens near Yarkand in January and February, and he gives details of the soft parts and measurements. He says that it was very common in the plains of Eastern Turkestan during the winter, and, in common with the other two species of Buzzard found in the country, disappeared in the spring. How well its specific name of *ferox* is justified is illustrated by the following note of Dr. Scully:—"I kept one of these Buzzards alive for some time, and found its disposition anything but gentle; when I went up to it it would throw itself on its back and strike out violently with its claws. It got loose one night in a room in which I had a number of other birds, and committed dreadful havoc, killing at least half a dozen birds, among the number a Kestrel. The Yarkandi shikaris called this Buzzard 'Tokhmak Sā' (the Mallet 'Sā'); but I do not believe they could really distinguish it from the other species of Buzzard."

Dr. Severtzow says:—"This species feeds on different *Arvicolæ* which are common on the Pamir and innumerable on the Alai. It was seen near Ran-Kul in July and August; but I do not know where it breeds. The dark variety of this species (*B. aquilinus*, Hodgs.) is also common enough."

Subfam. *AQUILINÆ*.

Genus **GYPAËTUS.**

9. Gypaëtus barbatus.

Gypaëtus barbatus (L.); Hume & Henders. Lahore to Yark. p. 170 (1873); Severtz. Turkest. Jevotn. p. 99 (1873); Dresser, Ibis, 1875, p. 99; Prjev. in Rowley's Orn. Misc. ii. p. 138 (1877); Wardlwa

Ramsay, Ibis, 1880, p. 47; Severtz. Ibis, 1883, p. 52; Zarudn. Ois. Transcasp. p. 30 (1885); Scully, Str. F. iv. p. 116 (1876); Radde, Ornis, iii. p. 467 (1887); Menzbier, Orn. Turkest. p. 22 (1888).

Dr. Henderson says that the Laemmergeier was "seen every day from Jamu to the plains of Yarkand and Sanju. It was the only large raptorial bird noticed beyond Leh, and on the Lingzi-thung plateau almost the only living creature except a species of antelope, of which no specimens were obtained. . . . . There is usually a pair to be seen near every village in Ladák. From Leh to Sanju the whole route is strewn with dead horses in various stages of desiccation, the climate being too cold and dry to admit of putrefaction: but the Laemmergeier was never observed feeding on these, except on one occasion; this was at Drás, on the 25th of October." His note on the species contains many items of interest.

According to Dr. Scully, "the Laemmergeier was often noticed on the journey through Ladak; but I only saw it once in Eastern Turkestan, viz. on the Sanju Pass and between the Pass and Kichik Yailak, on the 24th September, 1874. The Sanju Pass, though only 16,000 feet above sea-level, is perhaps the most difficult on the road from India to Yarkand, and is strewn on both sides with the carcases of dead horses. Marmots abound to above Kichik Yailak, and the Bearded Vulture is said to prey on them, besides feeding on carrion. The Turki name of this species is 'Ghiji.'"

Genus **AQUILA.**

10. Aquila chrysaëtus.

Aquila chrysaëtus (L.); Sharpe, Cat. B. Brit. Mus. i. p. 235 (1874); Scully, Str. F. iv. p. 123 (1876); Prjev. in Rowley's Orn. Misc. ii. p. 143 (1877); Homeyer & Taneré, MT. orn. Ver. Wien, 1883, p. 82; Radde, Ornis, iii. p. 469 (1887); Menzbier, Orn. Turkest. p. 55 (1888); id. N. Mém. Soc. Imp. Nat. Moscou, tom. xv. livr. v. p. 148 (1888).

Aquila fulva, var. *nobilis*, Severtz. Turkest. Jevotn. p. 63 (1873); Dresser, Ibis, 1875, p. 99.

Aquila nobilis and *A. daphanea*, Menzbier, Orn. Turkest. pp. 61, 72 (1888).

Dr. Scully writes:—"This species is the celebrated 'Birkut'—the name by which the Golden Eagle is known in Khokand and Western Turkestan generally; in Kashgharia, however, it is called 'Kara-Kush,' *i. e.* black bird. The trained bird is very common in Eastern Turkestan, every governor of a district or town usually having several. It is said to live and breed in the hills south of Yarkand and near Khoten, where the young birds are caught, to be trained for purposes of falconry. A few stragglers occasionally visit the plains in winter. I saw one a few miles from Yarkand in January, and another near Beshkant in February. In the wild state the Eagle's prey is said to consist of the stag, the 'Kik' (*Antilope subgutturosa*), the wild cat, the fox, and the wolf."

A very fine specimen of the Golden Eagle was sent by Dr. Lansdell from the Thian Shan mountains during his recent journey through Central Asia.

Genus **NISAËTUS.**

11. Nisaëtus pennatus.

Nisaëtus pennatus (Gm.); Sharpe, Cat. B. Brit. Mus. i. p. 253 (1874); Bidd. Ibis, 1881, p. 41; Scully, ibid. p. 420.

Aquila pennata, Severtz. Turkest. Jevotn. p. 63 (1873); Dresser, Ibis, 1875, p. 101; Blanf. East. Persia, ii. p. 112 (1876); Zarudn. Ois. Transcasp. p. 28 (1885).

Hieraëtus pennatus, C. Swinh. Ibis, 1882, p. 99.

A young specimen in the uniform brown plumage; but the label with the particulars of capture has been lost.

Colonel Biddulph procured this species in the Nubra Valley in June.

Genus **HALIAËTUS.**

12. Haliaëtus leucoryphus.

Haliaëtus leucoryphus (Pall.); Severtz. Turkest. Jevotn. p. 63 (1873); Hume & Henders. Lahore to Yark. p. 175 (1873); Sharpe, Cat. B. Brit. Mus. i. p. 308 (1874); Dresser, Ibis, 1875, p. 99; Scully, Str. F. iv. p. 124 (1876); Blanf. East. Persia, ii. p. 112 (1876); Severtz. Ibis, 1883, p. 53; Homeyer & Tancré, MT. orn. Ver. Wien, 1883, p. 82; Menzbier, Orn. Turkest. p. 41 (1888).

Haliaëtus macei, Prjev. in Rowley's Orn. Misc. ii. p. 148 (1877); Zarudn. Ois. Transcasp. p. 27 (1885).

No. 253. Srinagar, August 3, 1873.—Length 32 inches, wing 25, tail 12·25, tarsus 4·0. Iris light brown; bill blackish towards tip; feet waxy white; cere and gape very pale bluish.

Colonel Biddulph procured a specimen at Baramula.

Dr. Henderson states that several specimens of this Eagle were noticed between Yarkand and Karghalik.

Dr. Scully says:—"This bird is well known in Kashgharia, where it is called 'Giyah.' I noticed it on several occasions a few miles from the city of Yarkand, in June and July; and in August at Igarchi, and at Tungtash, about seven miles east of Karghalik. It was always seen in the neighbourhood of water, usually sitting motionless on the bank of a stream or on some mud-cliff near marshy ground. On one occasion I saw it feeding on the carcass of a dead horse, about five miles south of Yarkand. The Yarkandi shikaris say that the 'Giyah' feeds principally on fish and carrion, but that it sometimes strikes Crows and Hares."

"Pallas's Sea-Eagle," writes Dr. Severtzow, "is often seen near the Pamir lakes in August, also near Kara-Kul, Ran-Kul, and Jeschil-Kul. The old birds do not breed every year, but only every second year, in the same manner as *Gypaëtus barbatus* and the large Vultures. In the year in which they do not breed they moult in June, and lead a migratory life until winter, during which period many are seen on the Pamir."

Genus **POLIOAËTUS.**

13. Polioaëtus plumbeus.

Polioaëtus plumbeus, Hodgs. J. A. S. Beng. vi. p. 367 (1837).

A specimen of this Sea-Eagle was shot at Baramula by Colonel Biddulph.

Genus **MILVUS.**

14. Milvus melanotis.

Milvus melanotis, T. & S.; Sharpe, Cat. B. Brit. Mus. i. p. 324 (1874); Scully, Str. F. iv. p. 126 (1876); id. Ibis, 1881, p. 422; Prjev. in Rowley's Orn. Misc. ii. p. 152 (1877); Zarudn. Ois. Transcasp. p. 25 (1855); Menzbier, Orn. Turkest. p. 131 (1889).

Milvus govinda (nec Sykes), Hume & Henders. Lahore to Yark. p. 176 (1873); Bidd. Ibis, 1881, p. 44; Homeyer & Tancré, MT. orn. Ver. Wien, 1883, p. 82.

No. 179. Srinagar, July 26, 1873 (*Biddulph*). [Young bird.]

No. 178. Srinagar, July 26, 1873. [Young bird.]

No. 233. Srinagar, July 31, 1873. [An immature bird.]

No. 254. Srinagar, August 3, 1873. "Ghánds." [Young bird.]

No. 255. Srinagar, August 3, 1873. [An immature bird.]

No. 244, ♂. Srinagar, August 2, 1873.—Length 22·5 inches, wing 18·5, tail 10·5, tarsus 2·25; expanse 59·5. Iris pale chocolate-brown; bill black, cere entirely livid; feet pale bluish white, with no trace of yellow. [An immature bird.]

No. 839. Leh, September 6, 1873 (*Dr. Bellew*). [Young bird.]

No. 1414. Sasstekke, March 23, 1874.—Length 22·5 inches, wing 18·25, tail 11·0, tarsus 2·3. Iris brown; bill black; cere pale yellowish; feet pale leaden white. [An immature bird.]

No. 1719. Yangihissar, April 4, 1874. [An immature bird in moult.]

No. 1574. Panjah, April 26, 1874. [An adult bird.]

I believe all the Kites collected by Dr. Stoliczka to belong to the large race which Mr. Hume called *M. major*. They are certainly not *M. korschun*, which Severtzow records from the Pamir and from Turkestan.

Colonel Biddulph writes:—"Obtained at Kiziljilga, on the Karakash, in October. Elevation over 16,500 feet. In the summer, just as we were leaving Kashghar, I noticed the appearance of a few Kites."

Dr. Scully states that this was the only species of Kite observed in Eastern Turkestan, where it was tolerably common, especially in the plains. It was first noticed by him near Yarkand in April, and the last specimen seen in the country was near Sháhidúla about the end of August. It breeds in Kashgharia, and "is called 'Achah Koyruk Sā' ('the Fork-tailed Kite'), or occasionally 'Mizan Sā' ('the Balance Kite,' in allusion to the manner in which it poises while soaring)."

Genus **PERNIS.**

15. Pernis apivorus.

Pernis apivorus (L.); Sharpe, Cat. B. Brit. Mus. i. p. 344; Severtz. Turkest. Jevotn. pp. 63, 112; Dresser, Ibis, 1875, p. 102.

No. 840. Sháhidúla, October 20, 1873.

The entire absence of a crest induces me to believe that the present specimen belongs to the European and not to the Indian form. It is, however, so young that it is difficult to tell for certain, as its wing only measures 13·5 inches.

Genus **FALCO.**

16. Falco communis.

Falco communis, Gm.; Sharpe, Cat. B. Brit. Mus. i. p. 376 (1874).

Falco peregrinus, Severtz. Turkest. Jevotn. p. 63 (1873); Dresser, Ibis, 1875, p. 107; Scully, Str. F. iv. p. 117 (1876); Wardlaw Ramsay, Ibis, 1880, p. 47; Bidd. Ibis, 1881, p. 39; Scully, ibid. p. 416; Severtz. Ibis, 1883, p. 54; Homeyer & Tancré, MT. orn. Ver. Wien, 1883, p. 82.

No. 928. Sanju, October 29, 1873. [A young male.]

Dr. Scully obtained a specimen at Yarkand in March, and states that a few stragglers are occasionally seen near the city of Yarkand during the winter. He gives the following note:—"The Yarkandi falconers say that this bird is commonly found near the hills north of Eastern Turkestan in the neighbourhood of Ushturfan, Aksu, and Ili (Kuldja); and that many breed near Maralbashi, the nest being usually placed among reeds! They also add that in the wild state the Peregrine always preys on Ducks, Teal, and various Waders. The male is considered useless for sport, but the female is held in great esteem for the purposes of falconry; it is trained to strike Herons, Geese, Ducks, and Bitterns. The name given to this Falcon in Turkestan is 'Bahri,' an Arabic word meaning 'of the river' or 'of the sea,' thus implying that the Peregrine is a water-haunting species."

Dr. Severtzow says that the species migrates through the Alai and Pamir in a southerly direction in September.

17. Falco babylonicus.

Falco tscherniaievi, Severtz. Turkest. Jevotn. pp. 63, 114 (1873).
Falco barbarus, Scully, Str. F. iv. p. 118 (1876).
Falco babylonicus, Gurney; Hume, Rough Notes, i. p. 79 (1869); Dresser, Ibis, 1875, p. 106; Sharpe, Cat. B. Brit. Mus. i. p. 388 (1874); Scully, Str. F. iv. p. 118 (1876).

Dr. Scully supposed that he got both species of Red-headed Peregrine in Eastern Turkestan, but his specimens are all referable to *F. babylonicus* (*cf.* Gurney, Ibis, 1887, p. 158).

18. Falco subbuteo.

Falco subbuteo, L.; Sharpe, Cat. B. Brit. Mus. i. p. 395 (1874); Severtz. Turkest. Jevotn. p. 63 (1873); Dresser, Ibis, 1875, p. 108; Blanf. East. Persia, ii. p. 105 (1876); Bidd. Ibis, 1881, p. 39; Scully, ibid. p. 417; Homeyer & Tancré, MT. orn. Ver. Wien, 1883, p. 82; Radde, Ornis, iii. p. 468 (1887).
Hypotriorchis subbuteo, Hume & Henders. Lahore to Yark. p. 174 (1873); Scully, Str. F. iv. p. 119 (1876); Prjev. in Rowley's Orn. Misc. ii. p. 150 (1877); Zarudn. Ois. Transcasp. p. 29 (1885).

No. 882. Kiwáz, October 26, 1873. [A young bird.]
No. 1748. Yarkand, May 21, 1874. [Adult bird.]

Dr. Henderson found the Hobby not at all uncommon about Yangi Bázár, eight miles from Yarkand; and Dr. Scully says that it is a "seasonal visitant to the plains of Eastern Turkestan, where it breeds. It arrives in the neighbourhood of Yarkand in May, but not in any considerable numbers, and migrates, it is supposed towards India, in October, when the trees begin to lose their leaves. On our return journey to India in August this species was observed on five different occasions at our various halting-stages, but was not seen after leaving Sanju on the 14th of August. The Turki name for the Hobby is 'Jaghalbai.'"

19. Falco regulus.

Falco regulus, Pall.; Sharpe, Cat. B. Brit. Mus. i. p. 406 (1874).
Falco æsalon, Severtz. Turkest. Jevotn. p. 63; Dresser, Ibis, 1875, p. 107; Blanf. East. Persia, ii. p. 105 (1876); Bidd. Ibis, 1881, p. 39; Scully, ibid. p. 417; C. Swinh. Ibis, 1882, p. 99; Severtz. Ibis, 1883, p. 54; Homeyer & Tancré, MT. orn. Ver. Wien, 1883, p. 82.
Lithofalco æsalon, Scully, Str. F. iv. p. 120 (1876).
Hypotriorchis æsalon, Prjev. in Rowley's Orn. Misc. i. p. 151 (1877).

The Merlin was not procured by Dr. Stoliczka himself, but Colonel Biddulph says that he shot one about 16 miles to the east of Yarkand in November; this was the only one seen north of the Karakorum. Dr. Scully writes:—"The Turki name for the Merlin is 'Turumtai,' and it is said to live and breed in the hills of Eastern Turkestan. It visits the plains about Kashghar and Yarkand, in small numbers only, in winter—principally during the months of November and December, I think."

Dr. Severtzow gives the following note on the species in the Pamir range:—"The Merlin was seen at the end of July in the Bash-Alai. It probably breeds in the north Alai range. I found it breeding in the mountains near Vernoe in June 1879, and obtained for my collection a pair, male and female, with three nestlings, which all died soon, though fed on freshly-shot small birds only, which they ate greedily, and which was the food given them by their parents. They were taken too young, being only just out of the egg. Vernoe (43° N.) and Ferghana (39° 45′ N.), on the north Alai range, are unusually southern, although

alpine breeding-places. The nest near Vernoe was on a pine (*Pinus schrenkiana*) at a height of 8000 feet above the sea."

Genus **HIEROFALCO.**

20. Hierofalco gyrfalco. (Plate I.)

Hierofalco gyrfalco (L.); Sharpe, Cat. B. Brit. Mus. i. p. 416 (1874).
Falco gyrfalco, Homeyer & Taneré, MT. orn. Ver. Wien, 1883, p. 82.

No. 1744, ♀ juv. Yarkand, May 15, 1874.

This is a young bird doubtless, which I expected to prove to be one of the forms of Jerfalcon separated by Dr. Menzbier, but the immaturity of the specimen prevents any exact comparison with the species figured by him. The accompanying Plate by Mr. Keulemans gives a very good portrait of the Yarkand specimen, which, as far as I can see, is not different from European skins of *Hierofalco gyrfalco*. Dr. Stoliczka's diary does not give any particulars of the individual, nor does it state whether the bird had been captured in a wild state or had been used for hawking.

As far as I can see there is no difference between the Yarkand bird and true *H. gyrfalco*, and I cannot understand what *H. uralensis* of Menzbier can be, for the adult white bird figured by him (Orn. Turkest. pl. v.) is undoubtedly *H. candicans*!

21. Hierofalco milvipes.

Falco milvipes, Hodgs. in Gray's Zool. Misc. p. 81 (1844), descr. nullâ; Jerdon, Ibis, 1871 (April), p. 240.
Falco hendersoni, Hume, Ibis, 1871 (October), p. 407; id. & Henders. Lahore to Yark. p. 171, pl. 1 (1873); Scully, Str. F. iv. p. 117 (1876); Prjev. in Rowley's Orn. Misc. ii. p. 149 (1877); Severtz. Ibis, 1883, p. 53.

This species I considered in 1874 to be the final stage of plumage of the old *Hierofalco sacer*, but I now think this was a mistake, and am inclined to recognize *H. milvipes* as a good species. Dr. Henderson writes:—"A single specimen, a male, of this species, which Mr. Hume considers to be the Shanghar of Eastern Falconers, was shot on the 14th of September, 1870, at Kitchik Yílák in undulating country just north of the Sanju Pass, and 40 miles from Sanju, where the plains of Yarkand may be said to commence. There are no trees or bushes about; but the climate here is comparatively moist, and there is abundance of short grass, on the borders of which thousands of the Tibetan Snow-Pheasant (*Tetraogallus tibetanus*) were observed. Other Falcons, apparently of this species, were noticed in the immediate neighbourhood, but it was never seen elsewhere, and only one specimen was obtained."

Dr. Scully obtained a female at Kashghar, November 1874. He adds:—"The Turki name of this bird is 'Aitalgu,' and all competent authorities in such matters in Kashgharia assert positively that it is the female of the famed 'Shunkar.' The bird is rare in Eastern Turkestan, but is said to be a permanent resident and to breed there. I heard that it was occasionally obtained in the Dolan forest-region—in the direction of Aksu; from the district of Lob; from the hills near Sanju; and from the neighbourhood of Karchung, south-west of Yarkand. The 'Shunkar' is the most highly prized of all the Falcons, and whenever one is caught it is at once taken to the Amir, the Dad Khwah of Yarkand, or the Governor of the district; the 'Aitalgu' is not at all prized, and is considered hardly worth training. An experienced old Yarkandi bird-catcher, in looking at the pictures in my copy of 'Lahore to Yarkand' one day, fixed on the plate of *Falco hendersoni* and said at once that it was a representation of the *Shunkar*. Perfectly white *Shunkar* (albinos) were mentioned to me."

Genus **CERCHNEIS.**

22. Cerchneis tinnunculus.

Cerchneis tinnunculus (L.); Sharpe, Cat. B. Brit. Mus. i. p. 425 (1874); Severtz. Turkest. Jevotn. p. 63 (1873); Bidd. Ibis, 1881, p. 40; Scully, ibid. p. 418; Radde, Ornis, iii. p. 468 (1887).

Tinnunculus alaudarius, Dresser, Ibis, 1875, p. 108; Scully, Str. F. iv. p. 120 (1876); Blanf. East. Persia, ii. p. 105 (1876); C. Swinh. Ibis, 1882, p. 99; Zarudn. Ois. Transeasp. p. 29 (1885); Scully, J. A. S. Beng. lvi. p. 79 (1887).

Falco tinnunculus, Wardlaw Ramsay, Ibis, 1880, p. 47; Severtz. Ibis, 1883, p. 54; Homeyer & Tancré, MT. orn. Ver. Wien, 1883, p. 82.

No. 395. Leh, August 30, 1873. [Young female.]
No. 801. Kiziljilga, Karakash Valley, October 3, 1873. [Young male.]
No. 972. Karghalik, November 6, 1873. [Male moulting into adult plumage.]
No. 985. Yarkand, November 9, 1873. [Adult male.]
No. 986. Yarkand, November 9, 1873. [Young female in moult.]
No. 1123. Yapchan, December 3, 1873. "Kukunak Kushkunak." [Adult male.]
No. 1310. Kashghar, February 5, 1874. [Adult female.]
No. 1758. Yarkand, May 20, 1874. [Adult female.]

Colonel Biddulph procured specimens at Kashghar and Maralbashi in January. He states that it was very common in the plains country of Turkestan and in the low hills near Sanju; he did not notice it on the Pamir, but procured it again down in Wakhan.

Dr. Henderson states that the Kestrel was very common in Yarkand, and he also obtained it at Kargil, in Ladak, in June.

According to Dr. Scully the Kestrel is a permanent resident in Eastern Turkestan. It is common throughout the plains during the whole year, and observed in the hills of the country also, up to an elevation of about 12,000 feet. The Turki name for the Kestrel is 'Kurganak.'

Dr. Severtzow says that the Kestrel is often seen in summer on the Pamir and Alai.

Suborder PANDIONES.

Genus **PANDION.**

23. Pandion haliaëtus.

Pandion fluviatilis, Severtz. Turkest. Jevotn. p. 63 (1873).

Pandion haliaëtus (L.); Sharpe, Cat. B. Brit. Mus. i. p. 449 (1874); Dresser, Ibis, 1875, p. 102; Blanf. East. Persia, ii. p. 114 (1876); Prjev. in Rowley's Orn. Mise. ii. p. 146 (1877); Scully, Ibis, 1881, p. 420; Homeyer & Taneré, MT. orn. Ver. Wien, 1883, p. 82; Zarudn. Ois. Transeasp. p. 27 (1885).

No. 182. Srinagar, July 27, 1873.

Suborder STRIGES.

Fam. BUBONIDÆ.

Genus **SCOPS.**

24. Scops brucii. (Plate II.)

Ephialtes brucii, Hume, Str. F. i. p. 8 (1873).

Scops brucii (Hume); Sharpe, Cat. B. Brit. Mus. ii. p. 62 (1875); Bidd. Ibis, 1881, p. 47; Scully, ibid. p. 426.

No. 800. Karatágh Lake, October 10, 1873.—Length 7·6 inches, wing 6·25, tail 3·0, tarsus 1·4; expanse 21·5; bill from front 0·63, from gape 0·75. Iris sulphur-yellow; bill and feet greenish horny. Temperature at night 25° below zero. Caught at night on the ground near my tent.

No. 842. Sháhidúla, October 21, 1873.
No. 1459. Panjah, April 13, 1874.

Nos. 842 and 1459 are of the usual pale type and are matched by others in the Hume Collection from various parts of the north-west of the Indian Peninsula. The British Museum contains eight specimens of this rare species of Scops Owl, including the young bird. The only difference perceptible in the series is that some specimens have a more ochreous tinge, while some are greyer. The specimen from the Karatágh Lake is a distinct link between *Scops brucii* and *S. giu*, as it has a good deal of rufous about it, and approaches *S. giu* from the Persian Gulf.

Colonel Biddulph states that he shot a specimen between Sirhud and Panjah in Wakhan.

The specimens of this species now in the Museum are as follows:—

♂ ad. Boonji, near Gilgit, September 20, 1876 (*Col. J. Biddulph*).—Wing 6·3 inches.
♂ ad. Gilgit, March 23, 1880 (*Dr. J. Scully*).—Wing 6·3 inches.
♂ ad. Hyderabad, Sind, December 16, 1878 (*S. Doig*).—Wing 6·0 inches.
♂ ad. Chaman, S. Afghanistan, April 23, 1880 (*J. A. Murray*).—Wing 6·0 inches.
♀ juv. Chaman, June 3, 1880 (*H. E. Barnes*). (*Carine bactriana*, Barnes, Str. F. ix. p. 215.)
Ad. Sultanpur, Gurgaon, December 7, 1877 (*W. N. Chill*).—Wing 6·3 inches.
♂ ad. Ahmednuggur, January 20, 1870 (*H. J. Bruce*). Type of species.—Wing 6·35 inches.
♂ ad. Rahuri, Ahmednuggur, February 1876 (*S. B. Fairbank*).—Wing 6·1 inches.
Ad. Rahuri, Admednuggur (*S. B. Fairbank*).—Wing 6·4 inches.

Genus **BUBO.**

25. Bubo turcomanus.

Bubo maximus, var. *turcomanus*, Severtz. Turkest. Jevotn. p. 111 (1873).
Bubo ignavus (nec Forst.); Dresser, Ibis, 1875, p. 111.
Bubo turcomanus (Eversm.); Sharpe, Cat. B. Brit. Mus. ii. p. 17 (1875); Severtz. Ibis, 1883, p. 55; Zarudn. Ois. Transcasp. p. 22 (1885).
Bubo maximus, Scully, Str. F. iv. p. 129; Radde, Ornis, iii. p. 473 (1887).
Strix bubo, Homeyer & Tancré, MT. orn. Ver. Wien, 1883, p. 83.

Dr. Scully's specimens were brought to him alive, and he gives an interesting note concerning them. He observes:—"This fine Owl, called in Turki *Hui kush* (the 'hui' bird), was first seen in open waste ground, near Beshkant, on the 4th of February. It was attended by a flock of Crows, who seemed to be tormenting it, flying after it and surrounding it when settled on the ground, but always keeping at a respectful distance. The bird was again met with at Tungtash, near Karghalik, in August." Mr. Hume notes that the Turkestan specimens of the Eagle-Owl belong to the eastern pale form of the species, *B. turcomanus*, Eversm.

Genus **NYCTEA.**

26. Nyctea nivea.

Surnia nivea (L.); Severtz. Turkest. Jevotn. p. 63 (1873).
Nyctea scandiaca, Dresser, Ibis, 1875, p. 110; Sharpe, Cat. B. Brit. Mus. ii. p. 125 (1875).
Nyctea nivea, Scully, Str. F. iv. p. 128 (1876).
Strix nivea, Homeyer & Tancré, MT. orn. Ver. Wien, 1883, p. 83.

A specimen was brought alive to Dr. Scully at Kashghar, in December. The Turki name is 'Bai Kush' (the Noble bird).

Genus **ASIO.**

27. Asio otus.

Asio otus (L.); Sharpe, Cat. B. Brit. Mus. ii. p. 227 (1875); Dresser, Ibis, 1875, p. 112; Bidd. Ibis, 1881, p. 45; Scully, ibid. p. 424; id. J. A. S. Beng. lvi. p. 79 (1887); Sharpe, Trans. Linn. Soc. (2) Zool. v. pt. 3, p. 67 (1889).
Otus vulgaris (Flem.); Blanf. East. Persia, ii. p. 116 (1876); Scully, Str. F. iv. p. 127 (1876).
Ægiolius otus, Severtz. Turkest. Jevotn. p. 63 (1873).
Strix otus, Homeyer & Tancré, MT. orn. Ver. Wien, 1883, p. 83.

No. 922. Sanju, November 1, 1873.
Nos. 1050, 1052. Yarkand, November 24, 1873.
No. 1126. Kashghar, December 10, 1873.

Colonel Biddulph also obtained a specimen about 10 miles east of Yarkand on the 19th of November. He says it was never seen in the hills, but was common in the plains wherever there was any bush-jungle. Dr. Scully states that the Long-eared Owl was common about Kashghar and Yarkand during the winter; about the beginning of April it migrated, probably towards the forests of Maralbashi and Aksu, where he was told that it was known to breed. In Turki it is called 'Mashak Yapalak,' or Cat-Owl.

Genus **CARINE.**

28. Carine bactriana. (Plate III.)

Athene noctua orientalis, Severtz. Turkest. Jevotn. p. 63 (1873).
? *Carine glaux*, Dresser, Ibis, 1875, p. 110.
Carine plumipes, Swinh.; Sharpe, Cat. B. Brit. Mus. ii. p. 137 (1875).
Athene bactriana, Scully, Str. F. iv. p. 130 (1876).
Carine bactriana (Hutton); Barnes, Str. F. ix. p. 215 (1880); C. Swinh. Ibis, 1882, p. 100; Scully, J. A. S. Beng. lvi. p. 79 (1887); Sharpe, Trans. Linn. Soc. (2) Zool. v. pt. 3, p. 67 (1889).
Athene plumipes meridionalis, Prjev. in Rowley's Orn. Misc. ii. p. 155 (1877); Menzbier in Zarudn. Ois. Transcasp. p. 22 (1885).

No. 1209. Kashghar, January 18, 1874.—Length 8·8 inches, wing 6·7, tail 1·3; expanse 23·0. Iris pure sulphur-yellow; bill greenish yellow; feet grecnish, claws bluish horny black; cere pale greenish white and swollen; nostrils dark green. Closed wings reach within $\frac{3}{4}$ inch of end of tail.
No. 1381. Kashghar, March 8, 1874.

In Dr. Stoliczka's diary is a note:—"Yangishahr. On the 6th of February Oomra saw an *Athene* carrying grass for its nest in the hole of a bank of a river."

Colonel Biddulph procured a male at Kashghar on the 5th of March, 1874. He writes:—"Shot in the wall of the fort. It was common about Yarkand. I saw a small Owl, that I believe to have been this species, between Tashkurgan and the Pamir."

Dr. Scully observes:—"I first got this species at Kashghar in November, two birds having been brought to me alive. This little Owl was common near Kashghar and Yarkand during the whole winter and was observed at Sanju in August. It is a permanent resident and breeds in the country, living principally in holes in mud-banks and feeding on mice, lizards, and beetles. I have seen it flying about freely in the daytime, but its habits are reported to be chiefly nocturnal. The Turki name is 'Chaghundak.'"

Order PASSERIFORMES.

Suborder PASSERES.

Family CORVIDÆ.

Genus **TRYPANOCORAX**, Sundev.

29. TRYPANOCORAX FRUGILEGUS.

Corvus frugilegus, Linn. Syst. Nat. i. p. 156 (1766); Severtz. Turkest. Jevotn. p. 63 (1873); Dresser, Ibis, 1875, p. 237; Scully, Str. F. iv. p. 157 (1876); Blanford, East. Persia, ii. p. 263 (1876); Biddulph, Ibis, 1881, p. 77, 1882, p. 284; Scully, ibid. p. 571; C. Swinhoe, Ibis, 1882, p. 111; Homeyer & Taneré, MT. orn. Ver. Wien, 1883, p. 88; Radde, Orn. Cane. p. 125 (1884); Oates, Faun. Brit. Ind., Birds, i. p. 18 (1889).

Trypanocorax frugilegus, Sharpe, Cat. B. Brit. Mus. iii. p. 9 (1877); id. Trans. Linn. Soc. (2) Zool. v. p. 68 (1889).

No. 979. Yarkand, November 8, 1873.—Length 18·2 inches, wing 12·3, tail 7·0, tarsus 2·0; expanse 35·5. Iris dark brown; bill black; feet black. "Kara Kargha" (*Turki*). [A nearly adult bird, with the face and throat not quite denuded of the black downy plumes.]

No. 1170. Kashghar, December 20, 1873. [An immature bird with completely feathered face.]

No. 1280. Kashghar, January 26, 1874. [Fully adult.]

No. 1277. Kashghar, January 26, 1874. [Not fully mature, as it has the throat still retaining a little fluffy down.]

No. 1276. Kashghar, January 26, 1874. [In worn plumage with fully feathered face—probably a young bird of the preceding year.]

No. 1585. Langarkish, April 26, 1874. [In very rusty and worn plumage, with feathered face, the throat showing signs of denudation. Both this and the preceding specimen would probably not have nested this year.]

According to Dr. Scully the Rook is only a winter visitor to Kashghar, disappearing "from the vicinity of Yarkand in the beginning of April, migrating to the north, where it is said to breed in the hills near Aksu. The Turki name is 'Portumchuk Kargha,' *i. e.* 'The Rotten-beaked Crow,' in allusion to the rough scabrous skin covering the base of the bill." The Rook is plentiful in winter in North-western India.

Genus **CORVUS.**

30. CORVUS CORAX.

Corvus corax, Linn. Syst. Nat. i. p. 155 (1766); Severtz. Turkest. Jevotn. p. 63 (1873); Dresser, Ibis, 1875, p. 236; Taez. Bull. Soc. Zool. Franee, i. p. 172 (1876); Blanf. East. Persia, ii. p. 261 (1876); Prjev. in Rowley's Orn. Mise. ii. p. 283 (1877); Sharpe, Cat. B. Brit. Mus. iii. p. 14 (1877); Severtz. Ibis, 1883, p. 55; Zarudn. Bull. Soc. Nat. Mose. 1885, p. 59; Radde, Ornis, iii. p. 473 (1887); Oates, Faun. Brit. Ind., Birds, i. p. 14 (1889).

Corvus thibetanus, Hume & Henders. Lahore to Yark. p. 234 (1873); Scully, Str. F. iv. p. 155 (1876).

Corvus lawrencii, Hume; Swinh. Ibis, 1882, p. 111.

No. 463. Kargil, August 19, 1873.—Wing 17·9 inches.

No. 527. Snurla, on the Indus, August 24, 1873.

No. 597. Leh, August 30, 1873.—Wing 19·3 inches.

No. 613. Leh, September 4, 1873.—Wing 18·4 inches.

No. 1383. Kalti Ailák, March 1, 1874.—Wing about 17 inches.

This is the specimen recorded in the Diary (p. 33), and which Stoliczka thought was so small as to be certainly *C. lawrencii* of Hume; but it is in worn and moulting plumage, and consequently the measurements are defective.

No. 1541. Aktásh, May 5, 1874.—Wing imperfect, about 17 inches.

Ad. Karakorum-brangsa, June 15, 1874.—Length 25 inches, wing 18·3, tail 10·0, tarsus 2·8; expanse 54. Iris dark brown; bill and feet black.

Mr. Oates has drawn attention (*l. c.*) to the difference of size in the throat-hackles of the upland Raven, and his conclusions are decidedly confirmed by the series collected by Dr. Stoliczka. All the Ravens obtained in Leh are of the form called *C. tibetanus*, but those from the neighbourhood of Yarkand are of the smaller race, which Hume called *C. lawrencii*. Dr. Stoliczka seems to have noticed this himself, and on the whole question Mr. Oates's remarks should be studied, though he agrees with me (Cat. B. iii. p. 14) that it is impossible to separate the Alpine Raven as a species. Further notes on the dimensions of Indian and Central Asiatic Ravens will be found in Mr. Hume's account in 'Lahore to Yarkand' and in Dr. Scully's paper (*l. c.*).

Colonel Biddulph says that *C. tibetanus* was found throughout Ladak, not with the camp, but quite by themselves on the plain, and generally in pairs. He could not remember ever seeing a Raven in Yarkand. He observes:—"On the Pamir, at an elevation of 13,500 feet, I saw a flock of *C. tibetanus* of about twenty birds, and shot four. Between Kizil and Ak Robat, in the desert, I saw several flying overhead. Coming back I found them very tame and plentiful (this was in June) nearly at the top of the Karakorum, 18,500 feet."

Dr. Henderson's note is as follows:—"The Tibet Raven accompanied the camp throughout, from the first entry into Ladák right through Yarkand, almost to the city itself, and back again. It was extremely familiar and bold, and it was impossible to leave anything eatable about which it did not attempt to steal. Even milk-pots it would deliberately upset to obtain a sup of the contents. At the greatest altitudes and through the most absolute deserts at least half a dozen accompanied the camp, some doubtless of the very same birds thus travelling the whole way from Leh to the vicinity of the city of Yarkand. When the camp divided, about half the Ravens went with each party. On first starting in the morning, they always accompanied the party to a short distance, and then they returned to the old camping-ground, apparently to make sure that nothing eatable had been left behind, and there they might be seen prowling about wisely for an hour or so, again joining the party in the afternoon at the new camp."

Dr. Stoliczka noted the Raven as beginning to build its nest near Aktásh on the 4th of May.

Dr. Scully says that on the return journey, in August, the Raven was met with below Kizil Yailak, and was very numerous about the Sanju Pass.

Genus COLŒUS.

31. Colœus collaris.

Corvus collaris, Drummond, Ann. & Mag. Nat. Hist. xviii. p. 11 (1846).
Colœus monedula (nec L.); Horsf. & Moore, Cat. B. Mus. E.I. Co. ii. p. 562 (1856, pt.); Hume & Henders. Lahore to Yark. p. 239 (1873); Scully, Str. F. iv. p. 158 (1876).
Corvus monedula (nec L.); Severtz. Turkest. Jevotn. p. 63 (1873); Dresser, Ibis, 1875, p. 237; Blanf. East. Persia, ii. p. 263 (1876); Bidd. Ibis, 1881, p. 77; C. Swinh. Ibis, 1882, p. 111; Homeyer & Taneré, MT. orn. Ver. Wien, 1883, p. 88; Scully, J. A. S. Beng. lvi. p. 85 (1887); Oates, Faun. Brit. Ind., Birds, i. p. 22 (1889).
Colœus collaris, Sharpe, Cat. B. Brit. Mus. iii. p. 27 (1877); id. Trans. Linn. Soc. (2) Zool. v. pt. 3, p. 68 (1889).

No. 158. Baramula, July 25, 1873.
No. 188. Srinagar, July 28, 1873.
[These two specimens are in full moult.]
Nos. 980–983. Posgam, November 7, 1873.—Length 13 inches, wing 9·1, tail 4·9, tarsus 1·7; expanse 26·0. Iris blue; bill and feet black. "Zachea" (*Kokand*).
No. 943. Yarkand, November 8, 1873.
[The collar is nearly obsolete in this specimen.]
Nos. 987, 988. Yarkand, November 9, 1873.
[These two specimens, as well as No. 983, have a slight indication of a fringe to the feathers of the hind neck, showing a faint approach to *C. dauricus.*]
Nos. 1353, 1354. Kashghar, February 14, 1874.

Mr. Oates does not admit that *Colœus collaris* is distinct from the ordinary Jackdaw of Europe (*C. monedula*). I fancy that the birds which do not show a hoary collar are immature, when, of course, they would be exactly like young *C. monedula.* At present I look upon the Eastern Jackdaws as forming a well-marked race.

According to Dr. Scully they are only winter visitors to Kashghar, but they breed in the mountains of Aksu. Colonel Biddulph obtained a specimen at Maralbashi in January 1874, which Mr. Hume states to be absolutely identical with Kashmir individuals.

Colonel Biddulph's note is:—"Very common in Kashmir. This species, too, we first met in Yarkand at Sanju. It was very common during the winter everywhere in the plains as far as Maralbashi. It did not, however, ascend the hills in the Pamir."

Dr. Henderson states that the Jackdaw was very common almost everywhere in Kashmir, where it lives in the villages and makes its nest under the eaves of the houses and in old buildings.

Genus CORONE.

32. Corone sharpii.

Corvus cornix (nec Linn.); Horsf. & Moore, Cat. B. Mus. E.I. Co. ii. p. 553 (1856); Severtz. Turkest. Jevotn. p. 63 (1873); Dresser, Ibis, 1875, p. 237; Scully, Str. F. iv. p. 156 (1876); Blanf. East. Persia, ii. p. 262 (1876); Bidd. Ibis, 1881, p. 77; Seully, ibid. p. 570; C. Swinh. Ibis, 1882, p. 111; Severtz. Ibis, 1883, p. 55; Zarudn. Bull. Soe. Nat. Moscou, 1885, p. 59; Radde, Ornis, iii. p. 473 (1887).
Corone cornix, Sharpe, Trans. Linn. Soe. (2) Zool. v. pt. 3, p. 68 (1889).
Corvus sharpii, Oates, Faun. Brit. Ind., Birds, i. p. 20 (1889).

No. 950. Sanju, November 1, 1873. [A pure-bred Hooded Crow.]

No. 1070. Yarkand, November 21, 1873. [Hybrid between *C. sharpii* and *C. corone*, the latter element predominating.]

No. 1077. Yarkand, November 28, 1873. [A specimen in which *C. corone* largely predominates.]

No. 1279. Kashghar, January 26, 1874. [Pure-bred Hooded Crow.]

The Yarkand birds are like the Siberian ones, much paler and more dove-coloured than *C. cornix* of Europe, but yet not light enough for *C. capellanus*.

Dr. Scully says that the Hooded Crow was very common in the plains of Eastern Turkestan during the winter, when it was seen daily at Kashghar and Yarkand, associating with the Rook and the Black Crows.

Colonel Biddulph's note is as follows:—"Is a winter bird. We first found it at Sanju in November, and towards Yarkand it became commoner, being mixed up with the Black Crow, and all through the winter about Kashghar it was common to a degree in the streets and everywhere. When we went towards the Pamir it disappeared directly we got into the hills, and had left the plains of Yarkand altogether when we returned in May. The people said they went eastward." Dr. Scully also states that he saw the species first near Yangi Hissar in October, and it migrated from Yarkand about the end of March, to repair, it was said, to the hills near Aksu, where it is reported to breed. The Turki name for this species is "Ala Kargha," the "Variegated Crow."

This same pale form of Hooded Crow extends to Siberia, where Mr. Seebohm found it breeding with *C. corone* at Krasnoyarsk. It also appears to be the ordinary Crow of Persia, and reaches to Gilgit and the extreme north-west of India in winter.

33. Corone corone.

Corvus corone, Linn. S. N. i. p. 155 (1766); Severtz. Turkest. Jevotn. p. 63 (1873); Dresser, Ibis, 1875, p. 237; Scully, Str. F. iv. p. 156 (1876); Bidd. Ibis, 1881, p. 76; Scully, ibid. p. 570; Homeyer & Tancré, MT. orn. Ver. Wien, 1883, p. 88; Radde, Ornis, iii. p. 473 (1887); Oates, Faun. Brit. Ind., Birds, i. p. 16 (1889).

Corone corone (L.); Sharpe, Cat. B. Brit. Mus. iii. p. 36 (1877).

Corvus culminatus, Scully, Str. F. iv. p. 157 (1876).

No. 656. Leh, September 9, 1873.

No. 1067. Yarkand, November 28, 1873.

No. 1278. Kashghar, January 26, 1874.

I cannot see any difference between the two specimens of Crows collected by Dr. Scully and now in the Hume Collection. They are both, to my mind, *C. corone*, and I doubt if *C. culminatus* crosses into Yarkand.

Dr. Scully found the Carrion-Crow very common throughout the plains of Eastern Turkestan, where it lives permanently and breeds. He gives a description of the eggs.

34. Corone macrorhyncha.

Corvus macrorhynchus, Wagl. Syst. Av. *Corvus*, sp. 3 (1827); Oates, Faun. Brit. Ind., Birds, i. p. 17 (1889).

Corvus levaillanti, Less. Traité, p. 328 (1831); Bidd. Ibis, 1881, p. 77; Scully, ibid. p. 570.

Corvus intermedius, Adams, P. Z. S. 1859, p. 171; Hume & Henders. Lahore to Yark. p. 237 (1873).

Corone macrorhyncha, Sharpe, Cat. B. Brit. Mus. iii. p. 38 (1877).

Corone levaillanti, Sharpe, t. e. p. 39 (1877).

Corvus culminatus (nec Sykes), Wardlaw Ramsay, Ibis, 1880, p. 62.

No. 134. Urumbu, July 24, 1873.

This species is found throughout the Himalayas and extends to Gilgit.

Genus **PICA.**

35. Pica pica.

Corvus pica, Linn. S. N. i. p. 157 (1766).
Pica caudata, Severtz. Turkest. Jevotn. p. 64 (1873); Zarudn. Ois. Transcasp. p. 58 (1885).
Pica bactriana, Bp.; Hume & Henders. Lahore to Yark. p. 240; Scully, Str. F. iv. p. 158 (1876).
Pica rustica (Scop.), Dresser, Ibis, 1875, p. 238; Blanf. East. Persia, ii. p. 264 (1876); Wardlaw Ramsay, Ibis, 1880, p. 63; Bidd. Ibis, 1881, p. 78; Scully, ibid. p. 572; C. Swinh. Ibis, 1882, p. 111; Homeyer & Tancré, MT. orn. Ver. Wien, 1883, p. 88; Scully, J. A. S. Beng. lvi. p. 85 (1887); Oates, Faun. Brit. Ind., Birds, i. p. 24 (1889).
Pica media, Blyth; Prjev. in Rowley's Orn. Misc. ii. p. 278 (1877).
Pica pica (L.); Sharpe, Cat. B. Brit. Mus. iii. p. 62 (1877); id. Trans. Linn. Soc. (2) Zool. v. pt. 3, p. 69 (1889).

No. 449. Chiliscambo, August 18, 1873.
No. 483. Shargol, August 20, 1873.
No. 543. Leh, August 27, 1873.
[All the above specimens are in full moult.]
(No number.) Sanju, October 28, 1873. "Hakke" (*Kokand*); "Saghizghán" (*Turki*).
No. 926. Sanju, November 1, 1873.
No. 1181. Chakmak, Thian-Shan, January 3, 1874.
No. 1523. Panjah, April 14–23, 1873.

Although I am perfectly willing to admit that the amount of white on the quills in the Magpies varies considerably, yet none of the above specimens approach the white-winged form called *P. leucoptera*, which was only obtained in the vicinity of Yarkand. Dr. Scully apparently only met with the ordinary form of Magpie, but the winter specimens observed by him at Yarkand were probably *P. leucoptera*. He gives the following note:—"This Magpie was first observed, within the limits of Kashgharia, at Kiwaz (elevation 7500) on the 26th of September, 1874. After that it was not seen until we reached Kashghar in October, and there it was common in gardens and on roadside trees during the months of November and December. The bird appears to be almost unknown at Yarkand, where only a few stragglers are occasionally seen in winter. On the return journey in August it was seen on two occasions in pairs near Kizil Aghil and the Chuchu Pass. In summer this species appears to inhabit all the hills round Eastern Turkestan, viz. north of Aksu and Kashghar, Sarikol, and south of Yarkand and of Sanju, descending to the borders of the plains in winter." The Magpie breeds at Gilgit.

Dr. Henderson states that this species was "first met with at Dras, soon after crossing the Zoji-là into Ladák. All through this latter province it was common about every village until the Pangong Lake was reached. In Ladák it appears to bear the title of 'Hashambri.'"

Colonel Biddulph writes:—"We first found this at Kargil, and it became very common in the Indus Valley; but we lost it directly we crossed into the Pangong valley. We again met with a Magpie at Tám, a march above Sanju, and thence we found it very common about villages and cultivation the whole way to Kashghar and to Maralbashi; but on our way to the Pamir we lost it beyond Aktala, the first camping-ground in the hills (5500 feet)."

36. Pica leucoptera.

Pica leucoptera, Gould; Sharpe, Cat. B. Brit. Mus. iii. p. 66 (1877); Homeyer & Tancré, MT. orn. Ver. Wien, 1883, p. 88; Severtz. Ibis, 1883, p. 52; Sharpe, Trans. Linn. Soe. (2) Zool. v. pt. 3, p. 69 (1889).
Pica caudata, β. leucoptera, Severtz. Turkest. Jevotn. p. 64 (1873).

No. 1111. Yangihissar, December 2, 1873.
No. 1173. Kashghar, December 21, 1873.

Genus **UROCISSA.**

37. Urocissa flavirostris.

Urocissa flavirostris (Blyth); Hume & Henders. Lahore to Yark. p. 242 (1873); Sharpe, Cat. B. Brit. Mus. iii. p. 72 (1877); Oates, Faun. Brit. Ind., Birds, i. p. 27 (1889).

No. 18. Murree, June 23, 1873.
No. 58. Murree, June 28, 1873.
No. 276. Gond, Sind Valley, August 8, 1873.

Mr. Hume's opinion that Gould's *U. cucullata* cannot stand (Lahore to Yark. p. 242), is confirmed by Mr. Oates (*l. c.*). Dr. Henderson states that the species was very abundant throughout the Kashmir valley, at the foot of the hills; it was met with at Banihál and again near Baramula and Uri.

Genus **DENDROCITTA.**

38. Dendrocitta himalayensis.

Dendrocitta himalayensis, Blyth; Sharpe, Cat. B. Brit. Mus. iii. p. 79 (1877); Oates, Faun. Brit. Ind., Birds, i. p. 32 (1889).

No. 125. Rhara, Jhelum Valley, July 17, 1873.

A nestling, not fully grown.

Genus **GARRULUS.**

39. Garrulus bispecularis.

Garrulus bispecularis, Vig. P. Z. S. 1830, p. 7; Hume & Henders. Lahore to Yark. p. 242 (1873); Sharpe, Cat. B. Brit. Mus. iii. p. 100 (1887); Oates, Faun. Brit. Ind., Birds, i. p. 39 (1889).

No. 13. Murree, June 23, 1873.

A couple of specimens were obtained by Dr. Henderson on the road to Kashmir on each side of the snowy pass; it was not noticed elsewhere.

40. Garrulus lanceolatus.

Garrulus lanceolatus, Vigors, P. Z. S. 1830, p. 7; Sharpe, Cat. B. Brit. Mus. iii. p. 101 (1877); Oates, Faun. Brit. Ind., Birds, i. p. 38 (1889).

No. 8. Murree, June 21, 1873.
No. 41. Murree, June 25, 1873.

Genus **NUCIFRAGA.**

41. Nucifraga multipunctata.

Nucifraga multipunctata, Gould, P. Z. S. 1849, p. 23; Hume & Henders. Lahore to Yark p. 239 (1873); Sharpe, Cat. B. Brit. Mus. iii. p. 55 (1877); Bidd. Ibis, 1881, p. 78; Scully, ibid. p. 572; Oates, Faun. Brit. Ind., Birds, i. p. 41 (1889).

Nos. 287, 291–293. Gaganghir, August 9, 1873.

Dr. Henderson states that this species was common in the valley of Kashmir in October; it was met with at Sonámarg, below Báltal, and as low as Gond.

Genus **GRACULUS.**

42. Graculus graculus.

Corvus graculus, Linn. Syst. Nat. i. p. 158 (1766).
Fregilus graculus (L.); Hume & Henders. Lahore to Yark. p. 243 (1873); Severtz. Turkest. Jevotn. p. 63 (1873); Seully, Str. F. iv. p. 159 (1876); Prjev. in Rowley's Orn. Misc. ii. p. 285 (1877); Seully, Ibis, 1881, p. 572; Swinhoe, Ibis, 1882, p. 111; Homeyer & Taneré, MT. orn. Ver. Wien, 1883, p. 88; Zarudn. Ois. Transeasp. p. 59 (1885); Radde, Ornis, iii. p. 474 (1887).
Fregilus himalayanus, Gould, P. Z. S. 1862, p. 125.
Pyrrhocorax graculus, Dresser, Ibis, 1875, p. 237; Blanf. E. Persia, ii. p. 264 (1876); Biddulph, Ibis, 1881, p. 78; Severtz. Ibis, 1883, p. 55.
Graculus graculus (L.); Sharpe, Cat. B. Brit. Mus. iii. p. 146 (1877).
Graculus eremita (L.); Oates, Faun. Brit. Ind., Birds, i. p. 43 (1889).

No. 390. Mataian, Dras Valley, August 14, 1873 (*Capt. Trotter*).
No. 596. Leh, August 30, 1873.
Nos. 612, 614. Leh, September 4, 1873.
No. 715. Tanksi, September 16, 1873.
No. 1182. Chakmak, January 3, 1874.
No. 1418. Sasstekke, March 23, 1874.

The Leh specimens are very large and the wing reaches to 12·6 inches, and the smallest are the two from Sasstekke and Chakmak, which have the culmen 1·85 inch in length, whereas in the rest of the series it varies from 2·05 to 2·25 inches. The wing in the above smaller specimens is 10·7 to 11·3 inches; but it is absurd to found a specific distinction on the dimensions of the Chough, which varies greatly in size—the specimen from Mataian, for instance, having a wing only 10·7 inches in length (*cf.* also Sharpe, Cat. B. iii. p. 147).

Dr. Henderson, on his journey, found the Chough "very common all the way from the Sind Valley, through Ladák, to near the Pángong Lake. Red-billed Choughs, doubtless of this same species, were common on the Karakásh. On the upward journey, through Ladák, they were usually seen feeding morning and evening, in larger or smaller flocks, in cultivated ground; in October, on the return journey, they were feeding in enormous flocks on the berry of the *Hippophae rhamnoides*. This bird was known in Ladák as the *Chunka*."

Dr. Scully writes:—"The Red-billed Chough was first met with within the limits of Eastern Turkestan on the Sanju Pass in September 1874. When we got into the hills they were seen every day and were very numerous about Kichik Yailak at an elevation of 12,000 feet. The Turki name is 'Kizil tumchuk Kargha,' the Red-billed Crow."

The Chough was found by Colonel Biddulph "common everywhere above 10,000 or 11,000 feet." He adds:—"I think I saw both this and the Alpine Chough up to the greatest heights we ascended, say nearly 20,000 feet. I remark that the bills of the Pamir birds are more slender than in those from the Indus valley."

A note in Dr. Stoliczka's 'Diary' says that this species had already got young ones near Sasstekke on the 16th of May, but eggs were still to be had at that date.

Genus **PYRRHOCORAX.**

43. Pyrrhocorax pyrrhocorax.

Corvus pyrrhocorax, Linn. Syst. Nat. i. p. 158 (1766).

Pyrrhocorax alpinus, V.; Hume & Henders. Lahore to Yark. p. 249 (1873); Severtz. Turkest. Jevotn. p. 64 (1873); Dresser, Ibis, 1875, p. 237; Blanf. Geol. & Zool. E. Persia, ii. p. 263 (1876); Prjev. in Rowley's Orn. Misc. ii. p. 285 (1877); Sharpe, Cat. B. Brit. Mus. iii. p. 148 (1877); Biddulph, Ibis, 1881, p. 78; Scully, t. c. p. 573; Homeyer & Tancré, MT. orn. Ver. Wien, 1883, p. 88; Zarudn. Bull. Soc. Nat. Moscou, 1885, p. 59; Radde, Ornis, iii. p. 474 (1887); Oates, Faun. Brit. Ind., Birds, i. p. 44 (1889).

No. 525, ♀. N.E. of Lamaguru on the road to the Indus.—Length 15 inches, wing 10·25, tail 6·5, tarsus 1·5. Iris dark brown; bill pale fleshy horny, darkest towards tip; feet and toes blackish brown. A solitary specimen.

This is the individual which Stoliczka thought might belong to an undescribed species. As Mr. Hume has rightly conjectured, it is only the young of *P. alpinus* (vel *pyrrhocorax*).

No. 531. Saspúl on the Indus, August 25, 1873.—Length 17 inches, wing 10·6, tail 7·5, tarsus 1·7. Iris brown; bill yellow; feet coral-red.

No. 852. North of Sháhidúla, Karakash, October 22, 1873. "Kara-shachshág."

No. 1419. Sasstekke, February 23, 1874.

Colonel Biddulph's note runs:—"Found both in Himalayas, Karakorum (I did not go to the Thian Shan), and the Pamir, as well as the mountains leading to it. As a rule they were always found higher up than the Red-billed Choughs; except at the Pamir, they were less common than these latter, but at Aktash (12,600 feet) they were very numerous (May, 1874)."

Dr. Stoliczka found it breeding near Sasstekke on the 16th of May.

Genus **PODOCES.**

44. Podoces biddulphi. (Plate IV.)

Podoces biddulphi, Hume, Str. F. ii. pp. 503, 529 (1874); Sharpe, Cat. B. Brit. Mus. iii. p. 151 (1877).

No. 1258, ♂. Maralbashi, January 1874.

The typical specimen of *P. biddulphi* was a female, procured at Maralbashi by Colonel Biddulph on the 10th of January, and it is now in the British Museum.

No. 1730. Yarkand, May 15–20, 1874. "Bought alive in bazaar."

This is a young bird, and it has a much shorter bill than the adults, and both the bill and the legs are horny brown, instead of being black. The wings and the tail are like those of the adult, but there is a broader black mark along the centre of the middle tail-feather. The black facial markings are only just commencing to show, and the black head is obscured by broad sandy buff tips to the feathers.

Colonel Biddulph writes:—"I first saw these beyond Yengi-awat, on the road to Maralbashi. They were generally in pairs or singly on the road, pecking at horse-dung. The country was rather broken and covered with bushes. When alarmed, they fly up and perch on the topmost twigs of the bush. I heard no cry, but they are very wild and wary: if followed they go on from bush to bush, with short flights, always keeping out of shot. In the jungle north of Maralbashi I saw them in largish flocks of from ten to twelve, and when in flocks they did not appear quite so wary. The flight is heavy, flapping, undulating, something like that of a Woodpecker; it is not in the slightest degree like that of the Choughs."

45. Podoces hendersoni.

Podoces hendersoni, Hume, Ibis, 1871, p. 408; id. & Henders. Lahore to Yark. p. 244, pl. xxii. (1873); Scully, Str. F. iv. p. 159 (1876); Sharpe, Cat. B. Brit. Mus. iii. p. 151 (1877); Prjev. in Rowley's Orn. Misc. ii. p. 275 (1877).

Nos. 929, 931. Khushtágh, November 2, 1873.

No. 946. Bora.—Length 11·7 inches, wing 5·6, tail 4·3. Iris brown; bill and feet black. Wings reach within 2·2 inches of end of tail.

Nos. 1365, 1366, 1367. Tughamati, February 19, 1874.

The typical specimens killed in August by Dr. Henderson have distinct spots of sandy buff on the head; these spots are also seen in Dr. Scully's specimen killed on the 29th of September in the desert near Sanju. In the two birds from Khushtágh the spots are less, and in all the specimens shot in February there is no trace of any of the pale spots, showing apparently that they are indicative of winter plumage.

This species was discovered by Dr. Henderson in the desert ground after leaving Sanju, *en route* to Khushtágh, and also near to Oi-Tograk.

Dr. Scully writes:—"This species was only met with in the desert country which intervenes between Sanju and Karghalik—an arm of the great Takla Makan Desert—which we crossed on entering and leaving the plains of Eastern Turkestan. It was never seen or heard of near Kashghar, Yarkand, or the country which lies between those two cities." He gives a very interesting account of the habits of the species, and says that "the Turki name is *Kil yurgha*, which has reference to the bird running in the trail of horses; it is also, though rarely, called *Kum saghizghani*, or 'Sand Magpie.' It is a permanent resident in Eastern Turkestan, and is said to breed in May and June."

General Prjevalski also found the species "from Ordos and Ala-shan down to the Kan-su mountains; avoiding these, it settles at Tsaidam, but has not been observed on the high plains of Northern Tibet." In Gobi, between Ala-shan and Urgey, he repeatedly saw the species, and he therefore considered that its distribution extended to 45° N. lat.

"*Podoces hendersoni*," writes Colonel Biddulph, "we got in the desert between Sanju and Yarkand, and again between the latter and Kashghar. Like *P. biddulphi*, they were on the road, feeding, but always in bare ground, and not amongst bushes, but they were not so shy. These were always found in pairs or singly, as we never saw them perch on any bushes; indeed they were never seen where there were any bushes. Both species, but especially this one, run famously. When they first see you they do not take to flight, but start off running, and the present species never seems to fly unless hard-pressed."

46. Podoces humilis.

Podoces humilis, Hume & Henders. Lahore to Yark. p. 247, pl. xxiii. (1873); Scully, Str. F. iv. p. 161 (1876).

Dr. Henderson was the discoverer of this species also. He observes:—"This strange bird was only seen above Kichik Yailák on the way to Yarkand; on the return journey it was not met with. It frequents short grassy downs, at a height of about 1100 feet. They were not in flocks, but were scattered all over the hill-side."

Dr. Scully writes:—"This species was first observed and a specimen shot at Kiwaz (elevation 7487 feet) on the 26th of September, 1874. The birds were running about in the

fields, and perching on twigs and bushes. At Kichik Yailak, in August 1875, they were numerous, and frequented the grassy hill-sides which abound there; they would seldom fly, but ran up hill very nimbly, making it rather difficult to bag them, considering that the elevation was about 13,000 feet in the valleys. The Kirghiz say that this species, which they call *Zungak*, is a permanent resident near their encampment, and feeds on worms and insects, never on grain or seeds. They add also that the bird makes its nest in holes about the hill-sides, breeding in June or July, and that the young birds are able to fly about the end of September."

Family ORIOLIDÆ.

Genus **ORIOLUS.**

47. Oriolus kundoo.

Oriolus kundoo, Sykes, P. Z. S. 1832, p. 87; Hume & Henders. Lahore to Yark. p. 200, pl. xi. (1873); Dresser, Ibis, 1876, p. 187; Scully, Str. F. iv. p. 140 (1876); Bidd. Ibis, 1881, p. 54; Scully, ibid. p. 440; C. Swinh. Ibis, 1882, p. 106; Severtz. Ibis, 1883, p. 55; Oates, Faun. Brit. Ind., Birds, i. p. 504 (1889).

No. 132. Tinali, July 19, 1873.
No. 199. Srinagar, July 29, 1873.
Nos. 262–266. Srinagar, August 5, 1873. Native name "Poshmol."
No. 764. Sopur, July 26, 1873.
Nos. 1696, 1698. Kizil, May 19, 1874.
Nos. 1749–51, 1760. Yarkand, May 20, 1874.

Dr. Henderson found the species very common in Kashmir, both going and returning. It was met with again at Bora and Oi-Tograk, in the plains of Yarkand. "The Yarkandis called it the 'Zar Guldar,' a name apparently borrowed from the Persians."

Dr. Scully gives an interesting account of the nesting of the species in Yarkand. He states that it is a seasonal visitant to the plains of Eastern Turkestan, arriving about the end of April and migrating in September; it is never seen in winter. The Yarkandi name for the Oriole is *Sopia*, evidently given in imitation of its call. In Khokand the bird is called *Zar-ghaldak*."

Dr. Stoliczka says that he saw the first pair in 1874, on the 18th of May, at Ighiz Yar.

Family DICRURIDÆ.

Genus **BUCHANGA.**

48. Buchanga longicaudata.

Dicrurus longicaudatus, "A. Hay;" Jerd. Madr. Journ. xiii. pt. 2, p. 121 (1844); Oates, Faun. Brit. Ind., Birds, i. p. 314 (1889).

Buchanga longicaudata (Hay); Sharpe, Cat. B. Brit. Mus. iii. p. 249 (1877); Scully, Ibis, 1881, p. 436.

No. 59. Murree, June 29, 1873.
No. 79. Murree, July 2, 1873.
No. 165, juv. Sopur, July 26, 1873.
No. 261. Srinagar, August 5, 1873.

49. Buchanga atra.

Muscicapa atra, Hermann, Obs. Zool. p. 208 (1804).
Buchanga atra (Hermann); Sharpe, Cat. B. Brit. Mus. iii. p. 246 (1877).
Dicrurus ater, Oates, Faun. Brit. Ind., Birds, i. p. 312 (1889).

No. 123. Chuttrebelas, Jhelum Valley, July 16, 1873.
No. 124. Rhara on the Jhelum, July 17, 1873.
No. 133. Tinali, July 19, 1873.

Colonel Biddulph procured this species at Baramula.

Family STURNIDÆ.

Genus **STURNUS.**

50. Sturnus menzbieri.

Sturnus vulgaris (nec L.); Severtz. Turkest. Jevotn. p. 64 (1873); Dresser, Ibis, 1875, p. 238; Blanf. East. Persia, ii. p. 266 (1876, pt.); Prjev. in Rowley's Orn. Misc. ii. p. 287 (1877); Finsch, Verh. z.-b. Ges. Wien, xxix. p. 201 (1879); Bidd. Ibis, 1881, p. 78; Scully, ibid. p. 573; C. Swinh. Ibis, 1882, p. 111; Homeyer & Taneré, MT. orn. Ver. Wien, 1883, p. 89; Seully, J. A. S. Beng. lvi. p. 85 (1887).
Sturnus menzbieri, Sharpe, Ibis, 1888, p. 438; id. Cat. B. Brit. Mus. xiii. p. 33, pl. i. (1890); Oates, Faun. Brit. Ind., Birds, i. p. 522 (1889).

No. 953. Bora, November 4, 1873.

This specimen is in full winter plumage, and appears to be the only individual of the species met with by the Expedition. The Starling referred to by Stoliczka (Str. F. ii. p. 464) as *S. vulgaris* may have been this species, but about the same date he was also shooting specimens of *S. porphyronotus.*

51. Sturnus indicus.

Sturnus indicus, Hodgs. in Gray's Zool. Misc. p. 84 (1844); Sharpe, Cat. B. Brit. Mus. xiii. p. 35 (1890).
Sturnus nitens, Hume & Henders. Lahore to Yarkand, p. 250, pl. xxiv. (1873).
Sturnus humii, Brooks; Oates, Faun. Brit. Ind., Birds, i. p. 520 (1889).

No. 185. Srinagar, July 27, 1873.
Nos. 224, 230. Srinagar, July 31, 1873.
No. 250. Srinagar, August 3, 1873.—Length 8·3 inches, wing 4·5, tail 2·2, tarsus 1·0; expanse 13·6; bill from front 1·04, from gape 1·25. Iris yellow; bill blackish, pale towards the tips; feet reddish brown.

All the specimens are in worn and much abraded plumage. According to the strict letter of the law, Mr. Oates is no doubt right in calling this species *Sturnus humii,* as Hodgson never published a description of his *Sturnus indicus.* The names of the latter ornithologist, resting on his paper in Gray's 'Ornithological Miscellany,' and founded on his collection of paintings in the British Museum, have in so many cases been recognized and come into common use, that I think it is better to strain the law of nomenclature a little for their adoption.

52. Sturnus porphyronotus.

Sturnus unicolor (nec T.); Severtz. Turkest. Jevotn. p. 64 (1873); Dresser, Ibis, 1875, p. 238.
Sturnus vulgaris (nec L.); Hume & Henders. Lahore to Yark. p. 250 (1873); Scully, Str. F. iv. p. 162 (1876).
Sturnus purpurascens (nec Gould); Biddulph, Ibis, 1881, p. 79; Scully, ibid. p. 573; Severtz. Ibis, 1883, p. 55.
Sturnus porphyronotus, Sharpe, Ibis, 1888, p. 438; Oates, Faun. Brit. Ind., Birds, i. p. 521 (1889); Sharpe, Cat. B. Brit. Mus. xiii. p. 38, pl. 2 (1890).

No. 921. Sanju, November 1, 1873.—Length 9 inches, wing 5, tail 2·6, tarsus 1·2; expanse 14·7; bill from front 0·97, from gape 1·36. Iris very narrow, light brown; bill black; feet reddish brown.
No. 246. Sanju, November 1, 1873.
No. 989. Yarkand, November 9, 1873.
Nos. 1009, 1010. Yarkand, November 12, 1873.
No. 1291. Kashghar, February 2, 1874.
No. 1774. Kashghar, May 23, 1874.

Dr. Scully says that this Starling is a very common bird in the plains of Kashgharia. From about the end of February to the beginning of August the bird literally swarms in the neighbourhood of Yarkand, but it was never observed south of Karghalik; in the depth of winter it appears to migrate south-eastwards, but a few Starlings were seen even in January, between Kashghar and Yarkand. Turki name *Kara Kuchkach*, i. e. "Blackbird." Dr. Scully gives an account of the nidification of the species.

Writing from Yarkand, Dr. Stoliczka says that this species must begin breeding in the second half of April. It builds in holes of houses, walls, and chattis, &c. The eggs are pale blue.

Colonel Biddulph obtained this Starling in Kashghar in March and at Sanju on the 31st of October. He writes:—"Very common in the plains of Yarkand. I don't remember seeing it about Kashghar in the depth of winter, nor did we meet with it anywhere in the hills."

Genus **PASTOR.**

53. Pastor roseus.

Turdus roseus, Linn. Syst. Nat. i. p. 294 (1766).
Pastor roseus (L.); Horsf. & Moore, Cat. B. Mus. E.I. Co. ii. p. 539 (1856); Dresser, Ibis, 1875, p. 238; Scully, Str. F. iv. p. 164 (1876); Blanf. East. Persia, ii. p. 267 (1876); Biddulph, Ibis, 1881, p. 79; Swinhoe, Ibis, 1882, p. 111; Severtz. Ibis, 1883, p. 55; Homeyer & Tancré, MT. orn. Ver. Wien, 1883, p. 89; Zarudn. Ois. Transcasp. p. 58 (1885); Radde, Ornis, iii. p. 479 (1887); Scully, J. A. S. Beng. lvi. p. 86 (1887); Sharpe, Trans. Linn. Soc. (2) Zool. v. p. 82 (1889); id. Cat. B. Brit. Mus. xiii. p 65 (1890); Oates, Faun. Brit. Ind., Birds, i. p. 518 (1889).
Sturnus roseus (L.); Severtz. Turkest. Jevotn. p. 64 (1873).

No. 681, ♀ juv. Indus valley, south of Chimray, September 13, 1873.—Total length 9 inches, wing 5·1, tail 2·72, tarsus 1·2. Iris dark brown; bill dusky brown, yellow at base; feet fleshy brown.

Dr. Scully writes:—"A single specimen of the Rose-coloured Starling was obtained in Eastern Turkestan in September. It is said to be common in Khokand and Badakshan, where it feeds on mulberries; and the Yarkandi bird-catchers say that it only occurs as a mere straggler in Kashgharia, a few birds being occasionally seen in the summer after the prevalence of strong north-westerly or westerly winds. Its Turki name is *Sách*."

Genus **TEMENUCHUS.**

54. Temenuchus pagodarum.

Turdus pagodarum, Gm. Syst. Nat. i. p. 816 (1788).
Temenuchus pagodarum (Gm.); Horsf. & Moore, Cat. B. Mus. E.I. Co. ii. p. 528 (1856); Biddulph, Ibis, 1881, p. 79; Oates, Faun. Brit. Ind., Birds, i. p. 533 (1889); Sharpe, Cat. B. Brit. Mus. xiii. p. 73 (1890).
Sturnia pagodarum (Gm.); Wardlaw Ramsay, Ibis, 1880, p. 63; Scully, Ibis, 1881, p. 573.

No. 139. Hatti, July 21, 1873.

Genus **ACRIDOTHERES.**

55. Acridotheres tristis.

Acridotheres tristis (L.); Hume & Henders. Lahore to Yark. p. 252 (1873); Wardlaw Ramsay, Ibis, 1880, p. 63; Oates, Faun. Brit. Ind., Birds, i. p. 537 (1889); Sharpe, Cat. B. Brit. Mus. xiii. p. 80 (1890).

According to Dr. Henderson this species was very plentiful in Kashmir, and was observed ten miles beyond Srinagar, after which it was not again met with till the expedition returned to the same localities.

Family FRINGILLIDÆ.

Subfamily *FRINGILLINÆ.*

Genus **PYCNORHAMPHUS.**

56. Pycnorhamphus icteroides.

Coccothraustes icteroides, Vigors, P. Z. S. 1830, p. 8.
Hesperiphona icteroides (Vig.); Hume & Henderson, Lahore to Yarkand, p. 257 (1873); Wardlaw Ramsay, Ibis, 1880, p. 66.
Pycnorhamphus icteroides (Vig.); Hume, Nests & Eggs Ind. B. p. 469 (1873); Sharpe, Cat. B. Brit. Mus. xii. p. 44 (1888); Oates, Faun. Brit. Ind., Birds, ii. p. 198 (1890).

No. 11, ♂. Murree, June 22, 1873.
No. 31, ♀. Murree, June 25, 1873.
No. 87, ♀. Dungagally, July 3, 1873.
No. 107. Murree, July 9, 1873.
No. 344. Sonámarg, August 11, 1873.

Dr. Henderson also met with this Grosbeak at Sonámarg on the 19th of June.

Genus **FRINGILLA.**

57. Fringilla montifringilla.

Fringilla montifringilla, Linn. Syst. Nat. i. p. 318 (1766); Severtz. Turkest. Jevotn. pp. 64, 116 (1873); Dresser, Ibis, 1875, p. 241; Tacz. Bull. Soc. Zool. France, i. p. 179 (1876); Blanf. East. Persia, ii. p. 247 (1876); Finsch, Verh. z.-b. Ges. Wien, xxix. p. 205 (1879); Biddulph, Ibis, 1881, p. 87; Scully, t. e. p. 579; Homeyer & Tancré, MT. orn. Ver. Wien, 1883, p. 89; Radde, Ornis, iii. p. 480 (1887); Sharpe, Cat. B. Brit. Mus. xii. p. 178 (1888); Oates, Faun. Brit. Ind., Birds, ii. p. 233 (1890).

No. 870, ♂ ad. Camp, Tám, October 25, 1873.—Iris dark brown; bill yellow, blackish towards tip; feet pale horny brown. Length 6·75 inches, wing 3·75, tail 2·68, tarsus 0·75; expanse 11; bill from forehead 0·45, from gape 0·62.

No. 869, ♂ imm. Tám, October 25, 1873.—Iris brown; bill as above; feet pale horny. Length 6·35 inches, wing 3·3, tail 2·34, tarsus 0·75; expanse 10·2; bill from forehead 0·45, from gape 0·62.

No. 883, ♂ ad. Kiwaz, October 26, 1873.

No. 1196, ♂ ad. South of Chakmak, January 9, 1874.

No. 1295, ♂ ad. Kashghar, February 1, 1874.

No. 1296, ♀ ad. Kashghar, February 2, 1874.

No. 1482, ♂ ad. Panjah, April 18, 1874.—Iris blackish brown; bill greenish yellow above, blackish towards the tip, yellow round the base, particularly below; feet dusky brown, the claws darker, the soles yellow. Length 6·8 inches, wing 3·7, tail 2·7, tarsus 0·8; expanse 11·15; bill from forehead 0·48, from gape 0·58. Wings reach to within 1·2 inch of end of tail.

Nos. 1583-84, ♂ ♀. Langarkish, April 26, 1874.

The males shot in April are in full breeding-plumage, being black above and on the sides of the face. Dr. Stoliczka's notes show the change in the colour of bill in summer and winter.

Genus **CARDUELIS.**

58. Carduelis caniceps.

Carduelis caniceps, Vigors, P. Z. S. 1837, p. 23; Finsch, Verh. z.-b. Ges. Wien, xxix. p. 205 (1879); Wardlaw Ramsay, Ibis, 1880, p. 67; Bidd. Ibis, 1881, p. 85; Scully, t. c. p. 578; C. Swinh. Ibis, 1882, p. 115; Homeyer & Tancré, MT. orn. Ver. Wien, 1883, p. 89; Sharpe, Cat. B. Brit. Mus. xii. p. 189 (1888); Oates, Faun. Brit. Ind., Birds, ii. p. 225 (1890).

Carduelis orientalis, Eversm.; Severtz. Turkest. Jevotn. pp. 64, 116 (1873); Dresser, Ibis, 1875, pp. 243, 387; Tacz. Bull. Soc. Zool. France, i. p. 180 (1876); Zarudn. Ois. Transcasp. p. 54 (1885).

Nos. 229, 231, 234. Srinagar, July 31, 1873.
An adult and two young birds.

No. 283. Gond, August 8, 1873.—Length 3·36 inches, wing 3·3, tail 2·0, tarsus 0·8; bill from front 0·5, from gape 0·55. Iris dark brown; bill pale fleshy, dusky towards the tips; feet light horny brown.

Nos. 373, 378. Baltal, August 12, 1873.

No. 400. Mataian, August 14, 1873.

Colonel Biddulph only met with this Goldfinch in Kashmir, and procured specimens at Srinagar and in the Sind valley in July.

Genus **CHRYSOMITRIS.**

59. Chrysomitris spinoides.

Carduelis spinoides, Vigors, P. Z. S. 1831, p. 44.

Hypacanthis spinoides, Cab. Mus. Hein. Th. i. p. 161 (1850); Oates, Faun. Brit. Ind., Birds, ii. p. 231 (1890).

Chrysomitris spinoides, Sharpe, Cat. B. Brit. Mus. xii. p. 201 (1888).

No. 282. Gond, August 8, 1873.—Length 3·25 inches, wing 3·1, tail 1·8, tarsus 0·62; bill from front 0·42, from gape 0·5. Iris brown; bill fleshy brown above; feet horny brown.

Genus **CALLACANTHIS.**

60. Callacanthis burtoni.

Callacanthis burtoni (Gould); Sharpe, Cat. B. Brit. Mus. xii. p. 232 (1888); Oates, Faun. Brit. Ind. Birds, ii. p. 226 (1890).

Colonel Biddulph procured a male at Sonámarg on the 16th of July. He says it was seen here and at Gulmurg on the return journey only.

Genus **ACANTHIS.**

61. Acanthis brevirostris.

Linota brevirostris, Bp.; Hume & Henders. Lahore to Yark. p. 260, pl. 26 (1873); Scully, Str. F. iv. p. 170 (1876); Blanf. East. Persia, ii. p. 250 (1876); Prjev. in Rowley's Orn. Misc. ii. p. 306 (1877); Bidd. Ibis, 1881, p. 86, 1882, p. 284.

Acanthis flavirostris (nec L.); Severtz. Turkest. Jevotn. p. 64 (1873).

Linaria flavirostris (nec L.); Dresser, Ibis, 1875, p. 242.

Linaria brevirostris, Scully, Ibis, 1881, p. 578.

Acanthis brevirostris (Bp.); Sharpe, Cat. B. Brit. Mus. xii. p. 238 (1888); Oates, Faun. Brit. Ind., Birds, ii. p. 229 (1890).

Nos. 618, 619, 624. Leh, September 4, 1873.

Nos. 751, 752. Lukung, Pangong Lake, September 19, 1873.

No. 778. Chagra, September 21, 1873.

Nos. 792, 793. Pamsal, Changchenmo Valley, September 23, 1873.

Nos. 1194, 1195. Chakmak, January 9, 1874.

Nos. 1416, 1417. Sasstekke, March 23, 1874.

Nos. 1483, 1485, 1486, 1511, 1521. Panjah, April 14–23, 1874.

Nos. 1542, 1543, ♂ ♀. Panjah, April 24, 1874.—Length 5·5 inches, wing 3, tail 2·4, tarsus 0·68; expanse 9·15; bill from front 0·38, from gape 0·42; length of foot 1·2. Iris dark brown; bill greenish yellow, dusky towards the tip; feet brownish black. Middle toe 0·65 inch, hind toe 0·5; wings reach within 1·25 of end of tail.

Nos. 1545, 1547, 1548, 1550. Panjah, April 24, 1874.

No. 1558. Panjah, April 25, 1874.

No. 1846. Kugiár, June 2, 1874.

A full description of the changes of plumage in this Linnet are given by me in the British-Museum 'Catalogue' (*l. c.*).

Dr. Scully states that "this species was fairly numerous in the hills on the south side of Eastern Turkestan at elevations from 8000 to 13,000 feet. It was first observed near the Chuchu Pass, and was quite common near Gulgun Shah in the Karakash valley, where a young nestling was obtained, proving that the bird breeds in that locality—probably in July and August."

Dr. Stoliczka found the species common and evidently breeding at Panjah on the 15th of April, and after crossing the Chiklik Pass on the 4th of June, 1874, he says that he found it breeding in the valley near Duba.

Colonel Biddulph's note is as follows:—"We first met with this Linnet at Leh and near the Pangong lake. We procured them at intervals all across the Karakorum, both coming and going. We also got them in the plains of Turkestan during the winter, and in Wakhan in

the spring it was particularly common. They were generally in small parties, the individuals of which, however, were a good deal scattered. They usually perched about on bushes. I never remember hearing any song, nor did I see them in fields." Dr. Henderson obtained three specimens on the banks of the Arpalik River, in Hill Yarkand, a short distance from where the plains commence.

Genus **MONTIFRINGILLA.**

62. Montifringilla adamsi.

Montifringilla adamsi, Moore, MS.; Adams, P. Z. S. 1858, p. 482, 1859, p. 178, pl. 156; Hume & Henderson, Lahore to Yarkand, p. 262 (1873); Stoliczka, Str. F. ii. p. 463 (1874); Scully, Str. F. iv. p. 172 (1876); Prjev. in Rowley's Orn. Misc. ii. p. 289 (1877); Severtz. Ibis, 1883, pp. 60, 81; Prjev. Ibis, 1884, p. 244; Sharpe, Cat. B. Brit. Mus. xii. p. 261 (1888); Oates, Faun. Brit. Ind., Birds, ii. p. 246 (1890).

No. 491. Kharbu, Ladak, August 21, 1873.—Iris light brown; bill horny blackish, yellowish at base of lower mandible; feet black. Length 7·2 inches, wing 4·45, tail 3·0, tarsus 0·8; bill from front 0·5, from gape 0·62.

Apparently an adult male after breeding, with the bill just beginning to turn yellow. The terminal third of the inner secondaries only is white, and in most of them the black or brown colour extends to the end of the outer web. The back is indistinctly streaked with dark brown.

No. 496. Kharbu, August 21, 1873.

A male in worn breeding-dress, very similar to the foregoing.

No. 499. Kharbu, August 21, 1873.

Quite a young bird in ashy-brown plumage; the head rather darker ashy; back and scapulars with broad longitudinal centres of dark brown; rump and upper tail-coverts blackish, the lateral coverts white; lesser and median coverts brown, the latter white at the ends; greater coverts white, with concealed blackish bases, externally washed with pale tawny buff and dark brown at the ends; bastard-wing and primary-coverts dark brown, the latter with a little concealed white patch on the inner web; quills dark brown, edged with ashy fulvous, the secondaries with pale tawny buff, the inner ones subterminally white on the inner web, this not extending to the end of the feather; tail-feathers brown, broadly margined with pale tawny buff, all but the centre feathers with more or less white on the inner web, the outer ones almost entirely white, with an external wash of tawny and a small tip of dark brown; lores, eyelid, and a streak along the sides of the hinder crown ashy whitish; sides of face whitish, with a yellowish tinge, the ear-coverts pale ashy brown; throat and breast light ashy, the centre of the breast and abdomen yellowish white; sides of body and flanks pale fulvescent brown; under tail-coverts white, fulvescent at the ends; under wing-coverts and axillaries white.

No. 505. Kharbu, August 22, 1873.

An adult bird, apparently a female, with the bill almost entirely yellow. The white tips to the median wing-coverts are abraded, so that these appear to be brown like the lesser coverts, and the primary-coverts are only white in the middle, there being a broad basal as well as a terminal mark of dark brown.

Nos. 520, 522. Lamaguru, August 23, 1873.

An old male in worn breeding-plumage and a young male in first plumage. In the latter the whole under surface of the body is washed with pale yellow.

No. 635. Leh, September 5, 1873.

A young bird in full moult into its first winter plumage, which evidently resembles the immature plumage, but is much more rufescent, all the edges of the wing-coverts and tail-feathers being tawny buff.

No. 651. North of Leh, 13,000 feet, September 8, 1873.

Colonel Biddulph's specimens were collected between the 16th of May and the 30th of June at Digar, Kaskasu, and Leh. He writes :—"We first saw it about the Fotá-la. On our return from Wakhan we noticed a few individuals on the passes between Sarikol and Turkestan. We also found it on both sides of the Diga-la in June, and it was very common all about Leh."

Dr. Henderson says that this species was met with in June about Kharbu in Ladák; all the specimens then obtained had black bills. Returning in October it was observed in large flocks at the same locality, and all the specimens then procured had yellow bills. They occurred at a height of about 13,000 feet at the Fotá Pass.

Dr. Scully says :—"This Finch was met with on the return journey on the Chuchu Pass, at an elevation of 11,700 feet. Further on, in the hills of Eastern Turkestan, it was seen in suitable localities, but at heights of about 14,000 feet and above it seems to be entirely replaced by *M. hæmatopygia*."

On the 21st of August, Dr. Stoliczka writes in his 'Diary' :—"Going up the Namika-la the only bird was *Montifringilla adamsi*. Biddulph and I shot several; they were in flocks, feeding and running on the ground like Larks, rising somewhat similarly with a loud chirp."

63. Montifringilla alpicola.

Passer alpicola, Pall. Zoogr. Rosso-Asiat. ii. p. 20 (1811).
Montifringilla nivalis (nec L.); Severtz. Turkest. Jevotn. p. 75 (1873).
Montifringilla fringilloides, Boie; Dresser, Ibis, 1875, p. 242.
Montifringilla alpicola, Blanf. East. Persia, ii. p. 248 (1876); Seeb. Ibis, 1883, p. 10; Severtz. t. e. p. 60; Radde, Ornis, iii. p. 480 (1887); Sharpe, Cat. B. Brit. Mus. xii. p. 260 (1888).

No. 1668. Kaskasu Pass, May 15, 1874.—Length 7 inches, wing 4·7, tail 3, tarsus 0·95; expanse 13·7; bill from front 0·52, from gape 0·63; length of foot 1·4. Iris light hazel-brown; bill black; feet blackish brown. Middle toe 0·8 inch, hind toe 0·6; wings reach within 0·5 inch of end of tail.

Nos. 1669–1672. Kaskasu Pass, May 15, 1874.

In Dr. Stoliczka's 'Diary' he writes that he had observed this same "white *Montifringilla* on the Turgat Pass, north of Chakmak." The occurrence here recorded extends the known range of the species considerably to the eastward.

64. Montifringilla sordida.

Fringillauda sordida, Stoliczka, J. A. S. Beng. xxxvii. p. 63 (1868); Scully, Str. F. iv. p. 172 (1876); Biddulph, Ibis, 1881, p. 88; Scully, ibid. p. 579; Homeyer & Tancré, MT. orn. Ver. Wien, 1883, p. 89; Oates, Faun. Brit. Ind., Birds, ii. p. 248 (1890).
Fringillauda nemoricola (nec Hodgs.); Hume & Henderson, Lahore to Yarkand, p. 264 (1873).
Passer pulverulentus, Severtz. Turkest. Jevotn. pp. 64, 116 (1873).
Montifringilla sordida, Sharpe, Cat. B. Brit. Mus. xii. p. 266 (1888).
Fringillauda altaica, Eversm.; Severtz. Ibis, 1883, p. 60.

Nos. 392, 393, 399, 403. Mataian, August 14, 1873.

No. 409. Mataian, August 15, 1873.—Length 6·25 inches, wing 3·8, tail 2·55, tarsus 0·75; expanse 11·5; bill from front 0·43, from gape 0·53; length of foot 1·4. Iris light brown; bill horny; feet blackish horny.

No. 521. Lamaguru, August 23, 1873.

No. 720. Imm. Tanksi, September 17, 1873.

No. 1471, ♂. Panjah, April 16, 1874.—Length 6·5 inches, wing 4, tail 2·78, tarsus 0·72; expanse 12; bill from front 0·4, from gape 0·5; length of foot 1·37, spread of foot 1. Iris yellowish brown; bill dusky brown, pale at root and below; feet blackish brown.

Nos. 1491, 1493, 1495. Panjah, April 14–23, 1874.

No. 1544. Panjah, April 24, 1874.

No. 1581. Langarkish, April 26, 1874.

Dr. Stoliczka's series contains apparently specimens of both sexes, and the series confirms my account of the absence of difference between them. What the above-named author, in his 'Diary,' took for the old hens must have been immature birds. On the 16th of May he notes that the species was still migrating in large flocks near Sasstekke, but was beginning to pair. On the march up the Zoji-là, he found this species common "just on the pass. It flies about in flocks, very much like a Lark feeding on the ground. It has a chirping voice, not unlike that of *Passer*, and indeed replaces it, for we did not see one of the latter here."

Colonel Biddulph procured a female bird at Sakti on the 14th of September, 1873, at 12,800 feet. Mr. Hume has appended to the specimen the following note:—"This is much more rufescent than winter and spring birds. The whole of the head, nape, neck, chin, throat, face, and upper breast are streaked with dull ferruginous brown, darkest on the crown. The tips of the median and greater coverts, margins to the tertiaries and later secondaries, and centre tail-feathers bright rufous-buff; back more mingled with rufous; tips to upper tail-coverts rufescent and nearly obsolete." Colonel Biddulph also obtained specimens at Panjah in Wakhan in April 1874, and also in the Kalustan valley on the 6th of June. He sends us the following note:—"We found it on the Sakti Pass in September when going up, and all along the Karakash valley. It was also common in Wakhan in April and in the Kalustan valley in June. It seems generally common in the hills south of Turkestan, but I did not observe it in the plains country or higher up than 13,000 feet."

"This species," says Dr. Scully, "was observed near the course of the Sanju stream, between Tam and Kichak-Yailak, at elevations from 8900 to 12,000 feet." Dr. Henderson obtained a single specimen at Dras in Ladak, and thinks that some few birds probably breed there.

65. Montifringilla brandti.

Leucosticte brandti, Bp. Consp. i. p. 537 (1850); Severtz. Turkest. Jevotn. p. 64 (1873); Dresser, Ibis, 1875, p. 242; Biddulph, Ibis, 1881, p. 88; Severtz. Ibis, 1883, p. 58.

Montifringilla hæmatopygia, Gould; Hume & Henderson, Lahore to Yarkand, p. 261 (1873); Scully, Str. F. iv. p. 171 (1876).

Montifringilla brandti (Bp.); Sharpe, Cat. B. Brit. Mus. xii. p. 269 (1888).

Leucosticte hæmatopygia, Severtz. Ibis, 1883, p. 58.

Leucosticte pamirensis, Severtz. Ibis, 1883, p. 58.

Fringillauda brandti, Oates, Faun. Brit. Ind., Birds, ii. p. 248 (1890).

No. 698, ♀. Camp Tsúltak, north of Chang-la, September 15, 1873.
No. 711, ♂ juv. Tanksi, September 16, 1873.
Nos. 802–806, ♀. Karatágh Lake, October 10, 1873.
No. 807, ♀. Upper Karakash Valley, October 10, 1873 (received from J. Biddulph).
Nos. 1426–1436, ♂. Tarbashi, March 28, 1874.

I extract the following note from my 'Catalogue,' founded in great part on the specimens collected by the present Expedition :—" The specimen described is a female bird obtained by Mr. W. T. Blanford in the Kangra Lama Pass, Sikhim, on October 5, 1870. Two male specimens procured on the same date by Mr. H. J. Elwes have more rosy margins to the feathers of the rump, but are in general respects similar to the female described. Both are beginning to moult; and instead of the uniform ashy head, they have tawny-buff feathers with black bases, foreshadowing the appearance of the *first winter plumage of the young*. This we also know from the series collected in October by Dr. Stoliczka during the second Yarkand Expedition. The whole upper surface is sandy brown, with darker brown centres to the feathers of the mantle and back, the lower back having rosy ends to the feathers; wings and tail as in the adult bird, but all the feathers obscured by sandy-buff margins; under surface of body plain sandy buff, more ashy on the throat and breast. Some of the specimens have a faint rosy tinge on the lesser and median wing-coverts; in others, mostly females, this is absent or replaced by saffron-yellow, the rosy colour of the lower back being absent.

" The late Dr. Severtzoff recognized three forms of *M. brandti*, consisting of the typical species, *M. hæmatopygia*, and *M. pamirensis*; and Mr. Seebohm has kindly lent me the specimens on which these differences were founded, including the types of *M. pamirensis*. *M. brandti* is said to differ from the last-named species in having no red margins to the rump-feathers, and only a few red-marked feathers on the rump, the lesser wing-coverts being rosy in the male and buffy rufous in the female. The type of the latter is quite a young bird, which accounts for the absence of rosy colour. The true *M. hæmatopygia* is said by Severtzoff to resemble *M. brandti*, but has the whole of the rump rosy, with the tips of the feathers crimson; the lesser wing-coverts ashy, with no rosy on the margin.

" There seems to me to be nothing in these differences of plumage beyond what can be reasonably accounted for by age. In a large series, such as I have examined (over 50 skins), it is evident that very little stress can be placed on the amount of rose-colour on the rump. In young birds it is apparently feebly developed, and is sometimes absent altogether in winter plumage.

" The *winter plumage of the adults* differs from the summer plumage in being altogether more tawny buff, and the edges of the feathers becoming shed, the head, and gradually the back, get black; curiously enough, the red edgings to the wing-coverts are never seen in the black-headed stage, and hence Dr. Severtzoff contends that this form, the true *M. hæmatopygia*, is specifically distinct from *M. brandti* and *M. pamirensis*. The red margins to the wing-coverts are, however, so much more plain in the winter plumage, that I believe them to be characteristic of that season, being entirely lost by abrasion as the summer plumage is put on."

Colonel Biddulph's localities for the present species were Camp Tsúltak, Sept. 15, 1873, and Kúfelang on the 12th of June, 1874. He writes :—" I first met with this crossing the Sakti Pass. It was in large flocks in October in the lower part of the Karakash valley at about 12,000–13,000 feet. We saw it again on our way to Wakhan in large flocks near Chehil

Gombaz; again it was seen in great quantities and very tame about our camp on the Yarkand river south of the Yangi Diwan Pass; and generally we always saw it in the hills at elevations above 12,000 feet or so."

Dr. Stoliczka notes in his 'Diary' that this Finch was "very common" at Kashmir jilga on the 11th of June, 1874.

Dr. Henderson says that "this species was first met with after crossing the Chang-là above Leh. From thence it was seen at almost every camping-ground, until the Expedition descended to the Karakásh river. It was never met with below 14,000 feet, and often as high as 17,000; at these great heights it was almost the only resident bird met with." Dr. Lansdell found the species south of the Muzart on the 12th of August.

Genus **RHODOPECHYS.**

66. Rhodopechys sanguinea. (Plate V.)

Fringilla sanguinea, Gould, P. Z. S. 1837, p. 127.
Erythrospiza sanguinea (Gould); Blanf. East. Persia, ii. p. 252 (1876).
Rhodopechys sanguinea (Gould); Sharpe, Cat. B. Brit. Mus. xii. p. 280 (1888).

Nos. 1461–1465, 1515, ad. Panjah, April 14, 1874.

No. 1468, ♂ ad. Panjah, April 15, 1874.—Iris dark brown; bill yellow, dusky towards the tip of upper mandible; feet blackish, claws also; tarsi paler, brownish; soles of feet dark. Length 7 inches, wing 4·2, tail 2·4, tarsus 0·8; expanse 12·8; bill from forehead 0·5, from gape 0·6; middle toe 0·8, hind toe 0·6; wings reach within 0·8 of end of tail.

No. 1467, ♂ ad. Panjah, April 15, 1874.—Iris dark brown; bill dusky yellow, blackish at tip; feet blackish brown; tarsi lighter brown; claws brown; balls on soles of feet livid yellowish. Length 6·7 inches, wing 4, tarsus 0·77; expanse 12; bill from forehead 0·45, from gape 0·58; middle toe 0·72, hind toe 0·52.

No. 1469, ad. Panjah, April 16, 1874.—Iris brown; bill dull yellow; feet dark brown; tarsi brown; soles yellowish. Length 6·7 inches, wing 4, tail 2·25, tarsus 0·8; expanse 12; bill from forehead 0·5, from gape 0·58; wings reach within 0·87 of end of tail; middle toe 0·8, hind toe 0·6.

No. 1475, ♂ ad. Panjah, April 16, 1874.—Bill dull yellow, dusky at tip of upper mandible; feet dark brown; tarsi paler; soles dusky, a little yellowish. Length 7 inches, wing 4·03, tail 2·4, tarsus 0·8; expanse 12·25; bill from forehead 0·52, from gape 0·6; wings reach within 0·95 of end of tail.

Nos. 1551, 1553. Panjah, April 25, 1874.

The adult females differ from the males in having the black crown less distinct and obscured with sandy-brown edges to the feathers. They have much less rose-colour on the rump and on the wings, with a distinct patch of white at the base of the outer secondaries. The sandy-brown colour of the throat and sides of the body is paler than in the male and without any black streaks.

The immature males (which probably breed before they have got their full plumage) have the throat and sides of the body as in the adult male, dark sandy brown with black shaft-lines. The head is a little blacker than in the old female, and there is very little of the white patch at the base of the secondaries, in this respect resembling the old male.

Dr. Stoliczka writes in his 'Diary':—"Panjah, April 15. I got several specimens of

a Finch to-day, something like the Rosy Bullfinch, but larger, and it has not the deep tone of the latter, but the comparatively loud chirp of a *Fringilla*. There was a flock of them about the fort: perhaps they are permanent inhabitants here."

Colonel Biddulph writes:—"We met with this only at Panjah in Wakhan, in April—and there we only saw one large flock, which used to come every morning and settle on some bare ground near our camp, until we had shot most of them. The elevation of the place at which we shot them was 9000 feet."

Genus **RHODOSPIZA.**

67. Rhodospiza obsoleta.

Fringilla obsoleta, Licht. in Eversm. Reis. Anhang, p. 132 (1823).

Erythrospiza obsoleta (Licht.); Severtz. Turkest. Jevotn. p. 64 (1873); Dresser, Ibis, 1875, p. 247; Scully, Str. F. iv. p. 168 (1876); Blanf. East. Persia, ii. p. 352, pl. xvii. (1876); Prjev. in Rowley's Orn. Misc. ii. p. 303 (1877); C. Swinh. Ibis, 1882, p. 114; Menzb. Ibis, 1885, p. 353; Scully, J. A. S. Beng. lvi. p. 84 (1887).

Rhodospiza obsoleta, Sharpe, Cat. B. Brit. Mus. xii. p. 282 (1888); id. Trans. Linn. Soc. (2) Zool. v. p. 80 (1889).

No. 890, ad. Sanju, October 28, 1873.—Iris coffee-brown; bill black, paler about the middle; feet horny brown. Length 6·3 inches, wing 3·55, tail 2·7, tarsus 0·68; expanse 10·6; bill from forehead 0·4, from gape 0·55; length of foot 1·25.

No. 922, ad. Sanju, October 29, 1873.

Nos. 932, 937, ad. Sanju, October 30, 1873.

Nos. 940, 944, ad. Sanju, October 31, 1873.

No. 934, ad. Oi-tograk, November 3, 1873.

Nos. 975–977, ad. Kárghalik, November 6, 1873.

Nos. 990, 992, ad. Yarkand, November 10, 1873.

No. 1056, ad. Yarkand, November 24, 1873.

No. 1380, ad. Fyzabad, E. of Kashghar, March 3, 1874.

No. 1737, ad. Yarkand, May 20, 1874.

Nos. 792, 794, ad. Yarkand, May 26, 1874.

Nos. 1803, 1804, ad. Kárghalik, May 29, 1874.

Nos. 1806, 1807, ad. Kárghalik, May 29, 1874.

Nos. 1822, 1825, 1827, 1828, ad. Kárghalik, May 30, 1874.

Colonel Biddulph sends the following note:—"We first met with this at Sanju in November, and on the march thence to Yarkand. During the winter it was not obtained in Kashghar, but we found it very common throughout the plains of Yarkand, and right up to the foot of the hills during May and June.

"This bird has a peculiar piping note and the people are very fond of keeping it in cages. We never saw it high up in the hills. It is a true Finch, rarely seen on the ground, never in flocks, but always in pairs."

Dr. Scully found this species breeding in May and June. He writes:—"Numerous in the plains of Kashgharia, where it is a permanent resident. This species was common at Kashghar in winter, where it frequents the hedges, often in company with the Sparrow (*Passer montanus*). Near Yarkand in summer it was found about trees, in orchards, and in clumps of poplars. It has a very sweet song, and feeds entirely on seeds. The Turki name for the species is *Tumochuk*."

Dr. Stoliczka says in his 'Diary' that he got two nests and eggs near Yarkand on the 23rd of May. One nest was in a vine-bush about eight feet above the ground, and one in a mulberry-tree about twenty feet above the ground. The nest was large, composed outside of thin twigs of a thorny bush, inside with a thick lining of cotton and old rags and thread. The whole nest is somewhat loosely or carelessly made, roundish, and about an inch deep, but three inches wide. There were from four to five eggs in a nest; one had nearly developed young, so the bird must begin breeding about the beginning of May. The eggs are pale bluish, with some short streaks or dots of dark brown round the thicker end.

Genus **BUCANETES.**

68. Bucanetes mongolicus.

Carpodacus mongolicus, Swinh. P. Z. S. 1870, p. 447, 1871, p. 480; Severtz. Ibis, 1883, p. 56; Scully, Str. F. iv. p. 169 (1876).

Erythrospiza mongolica (Swinh.), Prjev. in Rowley's Orn. Misc. ii. p. 303 (1877); Finsch, Verhandl. z.-b. Gesellsch. Wien, xxix. p. 212 (1879); Barnes, Str. F. ix. p. 457 (1880); Homeyer & Tancré, MT. orn. Ver. Wien, 1883, p. 93; Sharpe, Cat. B. Brit. Mus. xii. p. 287 (1888); Oates, Faun. Brit. Ind., Birds, ii. p. 222 (1890).

Erythrospiza incarnata, Severtz. Turkest. Jevotn. pp. 64, 117 (1873); Dresser, Ibis, 1875, p. 245.

Bucanetes mongolicus, Menzbier, Ibis, 1885, p. 353.

No. 625, juv. Leh, September 14, 1873.

No. 728, ♂ juv. Muglib, east of Tanksi, September 18, 1873.—Iris brown; bill pale fleshy brownish; feet fleshy yellowish brown, soles orange. Length 6·2 inches, wing 3·3, tail 2·35, tarsus 0·9.

No. 729, ♀ juv. Muglib, September 18, 1873.

No. 887. Sanju, October 27, 1873.

No. 891, ♂ ad. Sanju, October 28, 1873.—Iris brown; bill yellowish pale horny; feet horny brown; tarsi with a reddish tinge. Length 6·3 inches, wing 3·75, tail 2·32, tarsus 0·7.

Nos. 934, 941. Sanju, October 30, 1873.

Nos. 1133, 1135, 1147, 1148. Kashghar, December 11 to 15, 1873.

Nos. 1182–1192. Chakmak, January 7 to 9, 1874.

Nos. 1261, 1262, 1270, 1281, 1282. Kashghar, January 24 to 31, 1874.

Nos. 1306, 1328, 1331, 1332, 1334, 1347, 1349, 1351, 1352. Kashghar, February 4 to 13, 1874.

No. 1439. Tashkúrghán, March 30, 1874.

No. 1519. Panjah, April 23, 1874.

The young bird resembles the adult female and has very little rosy colour on the quills, and none at all on the coverts or face. The upper surface and the wing-coverts are sandy brown, and the whole breast and flanks are suffused with sandy buff.

In the 'Catalogue of Birds' I adopted the generic name *Erythrospiza* for the Trumpeter Bullfinches. Count Salvadori, however, has written to me as follows:—"The genus *Erythrospiza*, Bp., was established much earlier than in the 'Fauna Italica.' You will find it in the 'Osservazioni al Regno Animale del Baron Cuvier,' p. 80 (1840), and it is an equivalent of *Carpodacus* of Kaup. You have not noticed that Bonaparte in the 'Fauna Italica,' both in the 'Introduzione' and in the text of *E. githaginea*, says that this species is not a typical *Erythrospiza*. So the genus *Bucanetes* must be used."

Dr. Stoliczka, in his 'Diary,' notes that the present species was very common near Sanju on the 27th of October, and on the 20th of the same month he mentions it as the only species he noticed on the Sanju hills.

Dr. Scully writes :—"This species is only a winter visitant to Eastern Turkestan, and even then it is not common; it is said to migrate eastwards, towards China, in the spring. Near Yarkand it frequents a sort of desert bush called *Kamghak*, on the seeds of which it appears to feed. It is rather a favourite cage-bird with the Yarkandis, on account of its sweet song."

Colonel Biddulph sends this note :—"We first obtained one or two specimens of this species at Tanksi (13,000 feet) in September. Again in the Karakash valley in October several specimens were procured on our arrival at Sanju in the beginning of November; they were seen settling in immense flocks in short grass in the morning. A few specimens were obtained during the winter in Kashghar, and in Wakhan in April we found it very common. They are chiefly ground-birds."

Genus **PETRONIA.**

69. Petronia petronia.

Fringilla petronia, Linn. S. N. i. p. 322 (1766).
Passer petronia (L.); Severtz. Turkest. Jevotn. p. 64 (1873); Dresser, Ibis, 1875, p. 420.
Pyrgita petronia (L.); Prjev. in Rowley's Orn. Misc. ii. p. 288 (1877); Radde, Ornis, iii. p. 481 (1887).
Petronia stulta (Gm.); Blanf. East. Persia, ii. p. 255 (1876); Bidd. Ibis, 1881, p. 79; Scully, ibid. p. 574; C. Swinh. Ibis, 1882, p. 113; Oates, Faun. Brit. Ind., Birds, ii. p. 243 (1890).
Petronia brevirostris, Tacz. Bull. Soc. Zool. France, i. p. 179 (1876).
Petronia petronia, Sharpe, Cat. B. Brit. Mus. xii. p. 289 (1888).

No. 1210. Kashghar, January 19, 1874. Length 6·5 inches, wing 4, tail 2·33, tarsus 0·8; expanse 12·2; bill from front 0·57, from gape 0·7; length of foot 1·4. Iris yellowish brown; bill bluish dusky, pale below; feet fleshy brown, more dusky on the soles.

No. 1228. Kashghar, January 23, 1874.

No. 1264, 1265, 1268, 1269. Kashghar, January 24, 1874.

No. 1273. Kashghar, January 25, 1874.

No. 1330. Kashghar, February 10, 1874.

Genus **PASSER.**

70. Passer montanus.

Fringilla montana, Linn. Syst. Nat. i. p. 324 (1766).
Passer montanus (L.); Horsf. & Moore, Cat. B. Mus. E. I. Co. ii. p. 500 (1856); Severtz. Turkest. Jevotn. p. 64 (1873); Hume & Henders. Lahore to Yark. p. 254 (1873); Dresser, Ibis, 1875, p. 239; Blanf. East. Persia, ii. p. 255 (1876); Scully, Str. F. iv. p. 178 (1876); Tacz. Bull. Soc. Zool. France, i. p. 178 (1876); Prjev. in Rowley's Orn. Misc. ii. p. 294 (1877); Finsch, Verh. z.-b. Ges. Wien, 1879, p. 210; Wardlaw Ramsay, Ibis, 1880, p. 64; St. John, t. c. p. 145; Homeyer & Tancré, MT. orn. Ver. Wien, 1883, p. 89; Radde, Ornis, iii. p. 482 (1887); Sharpe, Cat. B. Brit. Mus. xii. p. 302 (1888); Oates, Faun. Brit. Ind., Birds, ii. p. 240 (1890).

No. 879. Kiwáz, October 26, 1873.

Nos. 880, 884, 885, ad. Kiwáz, October 26, 1873.

Nos. 973, 974, ad. Kárghalik, November 6, 1873.
No. 1109, ad. Yangihissár, December 2, 1873.
No. 1204, ad. Kashghar, January 15, 1874.
No. 1206, ad. Kashghar, January 17, 1874.
No. 1212, ad. Kashghar, January 19, 1874.
Nos. 1224–1226, ad. Kashghar, January 23, 1874.

One of these is a cream-coloured variety. Dr. Stoliczka notes: "I saw another entirely white."

Nos. 1230, 1246, 1248, 1249, 1259, ad. Maralbashi, January 1874.

Dr. Stoliczka mentions in his 'Diary' that the Tree-Sparrow first became abundant at Kiwáz on the 20th of February. On the 14th of January he saw the first *Passer montanus* pairing and selecting a place for a nest. On the 22nd of May he procured a number of eggs at Yarkand, and writes in his 'Diary':—"The eggs are rather large, and vary much in marking. It builds in houses, but prefers holes of trees, and makes a large nest, inside thickly lined with wool, cotton, rags, &c. I saw as many as twelve eggs in one nest, and I wonder whether they are all from the same bird."

Dr. Scully states that the Tree-Sparrow breeds in Eastern Turkestan from May to August, and he believes that it rears two broods in the year. It is "the Common Sparrow of Eastern Turkestan, where it is a permanent resident. It abounds everywhere near inhabited places and cultivated fields, up to an elevation of about 7500 feet. The Turki name for the Tree-Sparrow is 'Ak Kuchkach,' *i. e.* 'The White Bird,' in Khokand, and by the Andijanis it is called 'Chumchuk,' but a Yarkandi would not understand what was meant by the latter name."

Dr. Henderson writes:—"The Tree-Sparrow of Europe is the House-Sparrow of the city of Yarkand, where it is almost as familiar and impudent as the English or Indian House-Sparrow. It was seldom noticed in the fields, or indeed anywhere except in and about the houses. In Turki it is called 'Chum-Chuk.'"

71. Passer domesticus.

Fringilla domestica, Linn. Syst. Nat. i. p. 323 (1766).

Passer domesticus (L.); Severtz. Turkest. Jevotn. p. 64 (1873); Dresser, Ibis, 1875, p. 239; Blanf. East. Persia, ii. p. 254 (1876); Tacz. Bull. Soc. Zool. France, i. p. 78 (1876); Finsch, Verh. zool.-bot. Gesellsch. Wien, 1879, p. 209; C. Swinh. Ibis, 1882, p. 112; Homeyer & Tancré, MT. orn. Ver. Wien, 1883, p. 89; Sharpe, Cat. B. Brit. Mus. xii. p. 308 (1888); Oates, Faun. Brit. Ind., Birds, ii. p. 236 (1890).

Passer indicus, J. & S.; Hume & Henders. Lahore to Yark. p. 252 (1873); Blanf. East. Persia, ii. p. 254 (1877); Wardlaw Ramsay, Ibis, 1880, p. 63; Bidd. Ibis, 1881, p. 79; Scully, ibid. p. 573; Bidd. Ibis, 1882, p. 281; Scully, J. A. S. Beng. lvi. p. 85 (1887); Radde, Ornis, iii. p. 482 (1887); Sharpe, Trans. Linn. Soc. (2) Zool. v. p. 79 (1889).

Passer domesticus indicus, Seebohm, Ibis, 1883, p. 8.

Nos. 245, 246, ♂ ♀ ad. Srinagar, August 2, 1873.
No. 534, ♂ ad. Saspúl, Ladak, August 25, 1873.
Nos. 556, 561, ♂, 563, 567, ♀ ad. Leh, August 28, 1873.

The bright-coloured race of the Common Sparrow, *Passer indicus* of authors, was not met with by the Expedition beyond Leh, and Dr. Henderson states that it was never seen in Yarkand; nor is the species in Dr. Scully's list.

72. Passer hispaniolensis.

Fringilla hispaniolensis, Temm. Man. d'Orn. p. 353 (1820).
Passer salicarius, Keys. u. Blas.; Severtz. Turkest. Jevotn. p. 64 (1873); Dresser, Ibis, 1873, p. 239; Blanf. East. Persia, ii. p. 255 (1876).
Passer hispaniolensis (T.); Bidd. Ibis, 1881, p. 79; Scully, t. e. p. 573; C. Swinh. Ibis, 1882, p. 113; Seully, J. A. S. Beng. lvi. p. 85 (1887); Sharpe, Cat. B. Brit. Mus. xii. p. 318 (1888); id. Trans. Linn. Soe. (2) Zool. v. p. 79 (1889); Oates, Faun. Brit. Ind., Birds, ii. p. 239 1890).
Passer salicicolus, Bp.; Seully, Str. F. iv. p. 164 (1876); Wardlaw Ramsay, Ibis, 1880, p. 64.

Nos. 1188, 1189, ♂. Chakmak, January 7, 1874.
No. 1415, ♂. Sasstekke, March 23, 1874.—Length 6 inches, wing 3·3, tail 2·5, tarsus 0·8; expanse 10; bill from front 0·45, from gape 0·6. Iris dark brown; bill brownish dusky, yellow at lateral base; feet pale brown.
No. 1241. Maralbashi, January 1874.
No. 1376. Tigdu, February 25, 1874.
No. 1898. Panjah, April 14–23, 1874.

Colonel Biddulph writes:—"Stoliczka got the first specimen at the commencement of January 1874, at the foot of the Thian-Shan range. Later a few specimens were got near Kashghar."

According to Dr. Scully, this Sparrow is tolerably common in the plains and is apparently a permanent resident in Eastern Turkestan. It nests in May and June, and the Turki name is "Tarachi."

73. Passer cinnamomeus.

Pyrgita cinnamomea, Gould, P. Z. S. 1835, p. 185.
Passer cinnamomeus (Gould); Hume & Henders. Lahore to Yark. p. 252, pl. 25 (1873); Sharpe, Cat. B. Brit. Mus. xii. p. 325 (1888); Oates, Faun. Brit. Ind., Birds, ii. p. 240 (1890).

No. 2, ♂ ad. Murree, June 20, 1873.
Nos. 46, 51, ♂ ad. Murree, June 26, 1873.
No. 67, ♀ ad. Murree, June 30, 1873.
Nos. 345, 346. Sonamarg, August 12, 1873.

Colonel Biddulph states that this Sparrow was common at Sonamarg, but was not seen elsewhere by him.

74. Passer ammodendri.

Passer ammodendri, Severtz. Turkest. Jevotn. pp. 64, 115 (1873); Dresser, Ibis, 1875, p. 239; Prjev. in Rowley's Orn. Misc. ii. p. 295 (1877); Sharpe, Cat. B. Brit. Mus. xii. p. 337 (1888).
Passer stoliczkæ, Hume, Str. F. 1874, p. 516.

No. 1142, ♂. Kashghar, December 13, 1873.
No. 1155, ♂. Kashghar, December 1, 1873.—Length 6·8 inches, wing 3·26, tail 2·6, tarsus 0·8; expanse 9·7; bill from front 0·4, from gape 0·36. Iris dark chocolate-brown; bill pale horny, yellowish at sides of base, paler below; feet fleshy white. Wings reach within 1·8 inch of end of tail.
No. 1156, ♀. Kashghar, December 17, 1873.—Length 6·9 inches, wing 3·15, tail 2·65, tarsus 0·8; expanse 9·75; bill from front 0·4, from gape 0·55. Iris dark chocolate-

brown; bill pale fleshy, tinged with dusky yellowish at the lateral bases; feet pale tinged with dusky; claws dark horny.

No. 1168, ♂. Kashghar, December 19, 1873.
No. 1208, ♂. Kashghar, January 18, 1874.
Nos. 1229, 1231, 1247, ♂, 1250, ♀, 1254–55, 1257. Maralbashi, January 1874.
No. 1294, ♂. Kashghar, January 2, 1874.
No. 1304, ♂. Kashghar, January 3, 1874.
No. 1338, ♂. Kashghar, Mareh 11, 1874.
Nos. 1341, ♀, 1345. Kashghar, February 12, 1874.
No. 1369, ♂. Aioksogon, February 19, 1874.
No. 1372. Jigda, February 22, 1874.
No. 1378. Jigda, February 26, 1874.

"In December," writes Colonel Biddulph, "one or two specimens were obtained near Kashghar. In January I found it tolerably plentiful along the road to Maralbashi. I saw them both feeding on the ground and perched in bushes. As far as I can remember, they were always found singly or in pairs."

Genus **SERINUS.**

75. Serinus pusillus.

Passer pusillus, Pall. Zoogr. Rosso-Asiat. ii. p. 28 (1811).
Serinus pusillus (Pall.); Dresser, Ibis, 1875, p. 243; Sharpe, Cat. B. Brit. Mus. xii. p. 373 (1888).
Metoponia pusilla (Pall.); Hume & Henders. Lahore to Yark. p. 259 (1873); Stoliczka, Str. F. ii. p. 464 (1874); Blanf. East. Persia, ii. p. 250 (1876); Wardlaw Ramsay, Ibis, 1880, p. 67; Bidd. Ibis, 1881, p. 86; Scully, t. c. p. 578; C. Swinh. Ibis, 1882, p. 115; Bidd. t. c. p. 284; Oates, Faun. Brit. Ind., Birds, ii. p. 230 (1890).
Orægithus pusillus (Pall.); Severtz. Turkest. Jevotn. pp. 64, 116 (1873).

No. 412, ♂. Mataian, August 15, 1873.—Length 5·2 inches, wing 3·05, tail 2·2, tarsus 0·5; expanse 9; bill from front 0·3, from gape 0·4; length of foot 1·1. Iris brown; bill black; feet black.

Nos. 450, 453, imm., 454. Chiliseambo, August 18, 1873.
No. 460. Kargil, August 19, 1873.
No. 779, juv. Chagra, September 21, 1873.
Nos. 1420, ♀, 1424, ♂. Tarbashi, Mareh 27, 1874.
No. 1559, ♂. Panjah, April 25, 1874 (*Col. Jordan*).
Nos. 1575–1579. Langarkish, April 26, 1874.

Dr. Stoliczka records this species in his 'Diary' as a permanent resident at Panjah.

Colonel Biddulph's localities are the Nubra Valley on the 25th of June, the specimens being in full breeding-plumage; Kargil on the 9th of July; and Panjah in Wakhan in April. He writes:—"We found this species everywhere up to 10,000 feet in the hills south and west of Turkestan and Wakhan in spring; also in Ladak, especially about Kargil in July. I did not see any in the plains of Turkestan, but I believe they breed there in the summer."

Dr. Henderson states that this Finch was met with in immense flocks, both in July and October, almost throughout Ladák, from Dras to the Fota-là. It probably breeds in May and not impossibly in Ladak.

Genus **CARPODACUS.**

76. Carpodacus erythrinus.

Loxia erythrina, Pall. N. Comm. Acad. Sci. St. Petersb. xiv. p. 587, pl. 23. fig. 1 (1770).

Carpodacus erythrinus (Pall.); Severtz. Turkest. Jevotn. p. 64 (1873); Hume & Henders. Lahore to Yark. p. 259 (1873); Dresser, Ibis, 1875, p. 245; Scully, Str. F. iv. p. 170 (1876); Tacz. Bull. Soc. Zool. France, i. p. 181 (1876); Prjev. in Rowley's Orn. Misc. ii. p. 181 (1877); Wardlaw Ramsay, Ibis, 1877, p. 461, 1880, p. 67; Bidd. Ibis, 1881, p. 83; Scully, ibid. p. 577; C. Swinh. Ibis, 1882, p. 114; Severtz. Ibis, 1883, p. 10; Homeyer & Tancré, MT. orn. Ver. Wien, 1883, p. 90; Sharpe, Cat. B. Brit. Mus. xii. p. 391 (1888); id. Trans. Linn. Soc. (2) Zool. v. pt. 3, p. 80 (1889); Oates, Faun. Brit. Ind., Birds, ii. p. 219 (1890).

Nos. 395, 397, 401, ♂ ad. Mataian, August 14, 1873.

Nos. 414, 415, ♀ ad. Mataian, August 15, 1873.

No. 410, ♂ ad. Mataian, August 15, 1873.—Iris brown; bill horny; feet horny brown. Length 6·5 inches, wing 3·5, tail 2·45, tarsus 0·7; expanse 10·4; bill from forehead 0·45, from gape 0·55.

No. 429, ♂ ad. Tashgam, August 17, 1873.

No. 477, ♂ ad. Shargol, August 20, 1873.

No. 494, ♂ ad. Kharbu, August 21, 1873.

No. 471, ♀ ad. Leh, August 29, 1873.

No. 588, ♀ ad. Leh, August 30, 1873.

No. 605, ♂ ad. Leh, August 31, 1873.

No. 607, ♂ ad. Leh, September 2, 1873.

No. 622, ♂ ad. Leh, September 4, 1873.

Nos. 717, 718, ♀ juv. Tanksi, September 17, 1873.

No. 773, juv. Chogra, September 21, 1873.

No. 1856, ♂ ad. S.E. of Chiklik, June 4, 1874.

No. 1861, ♂ ad. Duba, June 6, 1874.

In his 'Diary' Dr. Stoliczka notes that this species was very common at the Guláb-bágh in Leh on the 31st August, 1873.

Colonel Biddulph sends the following note:—"First met with directly we crossed the Zoji-lá into Ladák about the middle of August, and we found them extraordinarily numerous between Dras and the Zoji-lá in July on our return. The species was seen nowhere else, except in the Kulustan valley in June, and there it was common."

Dr. Scully writes:—"This species was first observed at Sanju, where it was flitting about among the trees; it was seen on several occasions in the hills among the bushes, and was tolerably numerous in the *Hololachne* bushes on the banks of the Karakash river near Sháhidúla. It had a tolerably loud sweet note." Dr. Henderson states that this *Carpodacus* was very common in Kashmir in June and July, from the Sind Valley; and in Ladák to the first pass beyond Leh. The birds were in small flocks, and only males were observed, so that the hen birds were probably sitting. It was not observed by him in the high desert regions, and when the Expedition returned none were seen in either Ladák or Kashmir.

77. Carpodacus severtzovi.

Carpodacus rubicillus (nec Güldenst.) ; Severtz. Turkest. Jevotn. p. 64 (1873) ; Hume & Henders. Lahore to Yark. p. 258 (1873) ; Dresser, Ibis, 1875, p. 245 ; Scully, Str. F. iv. p. 169 (1876) ; Tacz. Bull. Soc. Zool. France, i. p. 182 (1876) ; Prjev. in Rowley's Orn. Misc. ii. p. 298 (1876) ; Severtz. Ibis, 1883, p. 81 ; Menzbier, Ibis, 1885, p. 353.

Carpodacus severtzovi, Sharpe, P. Z. S. 1886, p. 354 ; id. Cat. B. Brit. Mus. xii. p. 400 (1888) ; Oates, Faun. Brit. Ind., Birds, ii. p. 220.

No. 854, ♂. South of Sanju Pass, October 22, 1873.—Length 8·5 inches, wing 4·5, tail 4, tarsus 0·85 ; expanse 13·6. Iris dark brown ; bill greenish horny ; feet dark horny.

No. 855, ♀. South of Sanju Pass, October 22, 1873.—Length 8·25 inches, wing 4·25, tail 3·5, tarsus 0·85 ; expanse 13·25 ; length of foot 1·5. Iris, bill, and feet the same as in the male.

Nos. 875, 876, 877, 878, ♀. Kiwáz, October 26, 1873.

Nos. 1437, 1438, ♂ ♀. Tashkúrghán, March 30, 1874.

No. 1460. Panjah, April 13, 1874.

No. 1518. Panjah, April 14–23, 1874.

Colonel Biddulph has furnished us with the accompanying note :—"Both coming and going we found this common in the Karakash Valley below Sháhidúla (11,500 feet) and on the Yarkand side of the Sanju Pass (9000 feet) ; also in Wakhán (9000 feet) ; again in the Kulustan Valley (10,000–11,000 feet) coming up to the Yangidewán Pass, where they were not very common. They were very abundant in June at Tutujalak (13,000 feet) between the Nobra Valley and the Tussia Pass."

Dr. Henderson procured a specimen on the 9th of October near the Pangong Lake, and two young birds were also obtained on the Arpalák River on the 13th of August, and he remarks that the species probably breeds in the neighbourhood. Dr. Scully writes :—"A pair of this fine species was first observed in a rocky gorge between Mazar and the Chuchu Pass ; they hopped from the buckthorn bushes growing by the side of a small mountain-stream and mounted up the hillside. After that this species was often seen along the banks of the Karakash from Kurgan Ali Nazar to Oibuk (elevation 10,700 to 11,700 feet). The arrival of our camps at Toghrasu on the 22nd August greatly disturbed a family of this Rose-Finch ; the male bird especially was very excited, flying backwards and forwards along the hillside and crying shrilly to its two youngsters to follow it out of reach of danger. Nearly all the birds of this species which I shot were found to have the bills stained a sort of pink colour ; this was probably due to the birds having been feeding on some kind of berry, as the colour rubbed off on wetting."

78. Carpodacus rhodochlamys.

Pyrrhula (*Corythus*) *rhodochlamys*, Brandt, Bull. Sci. Acad. Imp. St. Pétersb. 1843, p. 27.

Carpodacus rhodochlamys (Brandt) ; Severtz. Turkest. Jevotn. p. 64 (1873) ; Dresser, Ibis, 1875, p. 245 ; Menzbier, Ibis, 1885, p. 353 ; Sharpe, Cat. B. Brit. Mus. xii. p. 406 (1888).

Propasser rhodochlamys (Brandt) ; Stoliczka, Str. F. iii. p. 219 (1875).

Propasser rhodometopus, Bidd. Ibis, 1881, p. 156, pl. vi.

No. 722. Tanksi, September 17, 1873.

No. 726. Tanksi, September 17, 1873.—Bill pale horny ; feet fleshy brown ; iris brown. Length 8·5 inches, wing 4·25, tail 3·63, tarsus 0·9.

No. 757. Lukung, September 20, 1873.
Nos. 1095, 1098. Yangihissár, December 1, 1873.
Nos. 1103, 1105, 1106, 1108. Yangihissár, December 2, 1873.
Nos. 1141, 1143. Kashghar, December 13, 1873.
No. 1146. Kashghar, December 14, 1873.
No. 1216, ♂. Kashghar, January 20, 1874.—Length 8 inches, wing 3·5, tail 3·45, tarsus 0·9; expanse 10·75; bill from front 0·5, from gape 0·64; length of foot 1·5; wings reach within 2·4 of end of tail. Iris brown; bill dusky, paler below; feet horny brown.
No. 1217, ♀. Kashghar, January 20, 1874.—Length 7·75 inches, wing 3·3, tail 3·2, tarsus 0·9; expanse 10·5; bill from front 0·5, from gape 0·62; length of foot 1·5; wings reach within 2·1 of end of tail. Iris brown; bill greenish dusky, pale below; feet brown; tarsi fleshy.
No. 1371. Jaitupa, February 21, 1874.

79. Carpodacus stoliczkæ. (Plate VI.)

Propasser stoliczkæ, Hume, Str. F. ii. p. 523 (1874); Severtz. Str. F. 1878, p. 431.
Carpodacus stoliczkæ, Sharpe, Cat. B. Brit. Mus. xii. p. 403 (1888).

No. 1855, ♂. Chiklik, June 4, 1874. (Type of species.)
No. 1857. Chiklik, June 4, 1874.

Colonel Biddulph procured a female in the Kulustan Valley on the 6th of June. He says that it was tolerably common there, but was not noticed anywhere else. This specimen he gave to the late Mr. Mandelli and it passed with the rest of the Mandelli Collection into the Hume Collection.

Genus **PYRRHULA.**

80. Pyrrhula aurantiaca.

Pyrrhula aurantiaca, Gould; Hume & Henders. Lahore to Yark. p. 258 (1873); Stoliczka, Str. F. ii. p. 461 (1874); Bidd. Ibis, 1881, p. 82; Scully, t. e. p. 577; Sharpe, Cat. B. Brit. Mus. xii. p. 455 (1888).

Procured by Colonel Biddulph on the return journey at Sonámarg on the 11th of July. He writes to Mr. Hume:—"On our way up on the 12th of August we halted here for three days on purpose to get this bird, as you had requested Stoliczka to do so; but at that time not one was to be seen."

Dr. Henderson observes:—"This beautiful species was very common about the head of the Sind Valley. It was met with on the roadside in June and in October, and was quite tame and fearless. It associated in small flocks about six in number and flew from bush to bush, feeding on berries. It was met with in no other locality. The elevation at which it occurred was from about 7000 to 8000 feet."

Subfamily *EMBERIZINÆ*.

Genus **PYRRHULORHYNCHA.**

81. Pyrrhulorhyncha pyrrhuloides.

Emberiza pyrrhuloides, Pall. Zoogr. Rosso-Asiat. ii. p. 49 (1811); Severtz. Turkest. Jevotn. p. 64 (1873); Dresser, Ibis, 1875, p. 249; Scully, Str. F. iv. p. 166 (1876); Homeyer & Tancré, MT. orn. Ver. Wien, 1883, p. 90.

Schœnicola pyrrhuloides (Pall.); Tacz. Bull. Soc. Zool. France, i. p. 177 (1876).

Pyrrhulorhyncha pyrrhuloides, Finsch, Verh. zool.-bot. Ges. Wien, 1879, p. 106; Sharpe, Cat. B. Brit. Mus. xii. p. 475 (1888).

Nos. 1240, 1242. Marálbáshi, January 1874.

No. 1283. Kashghar, January 31, 1874.—Iris dark hazel; fect blackish brown; tarsi brown.

Nos. 1708, 1711. Yarkand, May 22, 1874.

Nos. 1775, 1780, 1781. Yarkand, May 24, 1874.

In Dr. Stoliczka's 'Diary' occurs the following:—"*Yarkand*, May 22nd. I got the eggs of the Black-headed Bunting (*E. pyrrhuloides*), which Biddulph brought first from Marálbáshi. It is common here. I got altogether three nests; two had four and one five eggs. The nest is a nicely-made, round, cup-shaped structure, composed outside of coarse *Juncus*-stalks, inside of fine grass with a thin lining of horse-hair. The nest is perfectly round, inside about $1\frac{3}{4}$ inch deep, with an inside diameter of $2\frac{1}{4}$ inches. The eggs are greenish grey, marbled and streaked with blackish brown of a deeper and paler shade, the colouring being more abundant towards the broader end."

Dr. Scully's note is as follows:—"The first specimen was shot at Beshkant in the beginning of February in waste ground overgrown with small bushes. Three other specimens were obtained near Yarkand in April. This bird frequents the edges of marshy ground and rice-fields, breeds in Kashgharia, and is probably a permanent resident. The Turki name for this Bunting is 'Karabash Kuchkach,' the 'Black-headed Bird.' The Yarkandi Shikaris say that the nest of this species is always placed in *Yekan*, *i. e.* 'reed-beds.'"

Genus **EMBERIZA.**

82. Emberiza schœniclus.

Emberiza schœniclus, Linn. Syst. Nat. i. p. 311 (1766); Severtz. Turkest. Jevotn. p. 64 (1873); Finsch, Verh. z.-b. Ges. Wien, 1879, p. 217; Bidd. Ibis, 1881, p. 81; Scully, t. c. p. 575; Homeyer & Tancré, MT. orn. Ver. Wien, 1883, p. 90; Sharpe, Cat. B. Brit. Mus. xii. p. 480 (1888).

Cynchramus schœniclus (L.); Prjev. in Rowley's Orn. Misc. ii. p. 309 (1877).

Schœnicola arundinacea (Gm.); Taez. Bull. Soc. Zool. France, i. p. 177 (1876).

Emberiza schœnicola, Scully, Str. F. iv. p. 166 (1876); C. Swinh. Ibis, 1882, p. 84.

No. 925, ♂ juv. Sanju, November 1, 1873.

No. 930. Khushtágh, November 2, 1873.

No. 968. Kárghalik, November 7, 1873.

Nos. 1001, 1002, 1006, 1008, 1011. Yarkand, November 12, 1873.

No. 1039, ♂ hiem. Yarkand, November 22, 1873.

All the above specimens appear to be males in winter plumage. No. 1001 may be a female.

No. 1167, ♂. Kashghar, December 19, 1873.

No. 1272, ♂. Kashghar, January 25, 1874.—Bill dusky pale bluish, the culmen blackish; feet fleshy brown. Length 6·8 inches, wing 3·56, tail 3, tarsus 0·8.

Nos. 1285, 1286, ♀. Kashghar, January 31, 1874.

No. 1300, ♂. Kashghar, February 3, 1874.

No. 1336, ♂. Kashghar, February 11, 1874.

Nos. 1342, 1344, ♀. Kashghar, February 12, 1874.

No. 1350, ♂. Kashghar, February 13, 1874.

No. 1382, ♂. Kashghar, March 8, 1874.

Nos. 1234, 1245, ♀, 1256, ♂. Marálbáshi, January 1874.

No. 1379, ♂. Faizabad, March 2, 1874.

The whole series is in winter plumage; nor do the males killed in the middle of February or in March show much sign of shedding the tips to the black feathers of the throat.

Colonel Biddulph procured specimens at Yarkand in November, and at Kashghar in December, February, and March, as well as at Marálbáshi. They were very common during the winter. He also noticed the species on the march near Kárghalik in November.

According to Dr. Scully this species was "common near Yarkand in winter, and four specimens were preserved in January and February. It frequented hedges and small trees and was said by the Yarkandis to be a permanent resident; but I never observed it in summer." The Turki name for this bird is "Cha-Kuchkach."

83. Emberiza pusilla.

Emberiza pusilla, Pall. Reis. Russ. Reichs, iii. p. 697 (1776); Severtz. Turkest. Jevotn. p. 64 (1873); Dresser, Ibis, 1875, p. 249; Tacz. Bull. Soc. Zool. France, i. p. 177 (1876); Prjev. in Rowley's Orn. Misc. ii. p. 308 (1877); Wardlaw Ramsay, Ibis, 1877, p. 462; Finsch, Verh. z.-b. Ges. Wien, xxix. p. 216 (1879); Sharpe, Cat. B. Brit. Mus. xii. p. 487 (1888); Oates, Faun. Brit. Ind., Birds, ii. p. 254.

No. 845. South of Sanju Pass, Karakash Valley, October 22, 1873.—Length 5·35 inches, wing 2·75, tail 2·25; expanse 8·5. Bill greenish horny; feet brownish yellow.

An apparently adult bird in winter plumage.

84. Emberiza rustica.

Emberiza rustica, Pall. Reis. Russ. Reichs, iii. p. 698 (1776); Tacz. Bull. Soc. Zool. France, i. p. 175 (1876); Finsch, Verh. z.-b. Ges. Wien, 1879, p. 216; Homeyer & Tancré, MT. orn. Ver. Wien, 1883, p. 90; Sharpe, Cat. B. Brit. Mus. xii. p. 491 (1888).

No. 919, ♂ hiem. Sanju, October 29, 1873.—Length 6·2 inches, wing 3·1, tail 2·4, tarsus 0·75; expanse 8·6; bill from front 0·4, from gape 0·5. Iris reddish brown; bill blackish horny, pale brown along the posterior culmen; lower mandible pale fleshy brown, dusky at the sides and tip; feet pale horny brown, with a very slight fleshy tinge. Wings reach within 1·35 inch of tip of tail.

No. 935, ♂ hiem. Sanju, October 30, 1873.

85. Emberiza luteola.

Emberiza luteola, Sparrm. Mus. Carls. fasc. iv. taf. 93 (1788); Dresser, Ibis, 1875, p. 249; Scully, Str. F. iv. p. 167; Severtz. Ibis, 1883, p. 60; Homeyer & Tancré, MT. orn. Ver. Wien, 1883, p. 90; Sharpe, Cat. B. Brit. Mus. xii. p. 506 (1888); id. Trans. Linn. Soc. (2) Zool. v. pt. 3, p. 80 (1889).
Emberiza brunneiceps, Severtz. Turkest. Jevotn. p. 64 (1873).
Euspiza luteola (Sparrm.); Wardlaw Ramsay, Ibis, 1880, p. 66; Bidd. Ibis, 1881, p. 81; Scully, ibid. p. 575; C. Swinh. Ibis, 1882, p. 114; Bidd. ibid. p. 282; Scully, J. A. S. Beng. lvi. p. 85 (1887).

Nos. 1703, 1735, 1757, ♂, 1759, 1761, 1764. Yarkand, May 16 to 21, 1874.
Nos. 1785, 1787, 1788, ♂. South-west of Ighiz Yar, May 18, 1874.
Nos. 1694, 1695, ♂ ♀. Kizil, May 19, 1874.
No. 1837, ♀. Kugiár, June 1, 1874.
All birds in full breeding-plumage.

Colonel Biddulph writes:—"We never saw this Bunting during the winter or until May, when, on our return from the Pamir, we emerged from the hills. We first saw it at Ighiz Yar, and thenceforward noticed it in abundance everywhere in the plains and amongst cultivation. It was breeding."

Dr. Scully says:—"This species is a seasonal visitant to the plains of Eastern Turkestan, arriving about the end of April and leaving in September. The birds were numerous from the end of May to July near Yarkand. This Bunting breeds in May and June." He gives a full description of the nest and eggs.

On the 27th of May, Dr. Stoliczka writes in his 'Diary':—"Near Yarkand *Euspiza luteola* is building a nest in low bushes in open gardens." At Beshterek on the 31st of May he observes:—"A man brought a nest which he assured me was that of *E. luteola*, called *Sare kutshkajtsh*. The nest was on or very near the ground; made outside of very coarse grass, inside lined with hair of horse and other animals. It is only about 1 inch deep and about $2\frac{3}{4}$ inches in diameter; somewhat loosely constructed, like that of a *Motacilla*. The eggs are whitish, dotted all over with brown, the dots most numerous round the thick end."

86. Emberiza hortulana.

Emberiza hortulana, L.; Severtz. Turkest. Jevotn. p. 64 (1873); Dresser, Ibis, 1875, p. 248; Blanf. East. Persia, ii. p. 259 (1876); Bidd. Ibis, 1881, p. 80; Scully, t. c. p. 574; Homeyer & Tancré, MT. orn. Ver. Wien, 1883, p. 90; Sharpe, Cat. B. Brit. Mus. xii. p. 530 (1888); id. Trans. Linn. Soc. (2) Zool. v. pt. 3, p. 80 (1889).

No. 1709. Yarkand, May 22, 1874.

Dr. Scully notices the occurrence of the Ortolan Bunting in Gilgit during the time of passage. He says that his specimen was inseparable from European examples, and the type specimen of *Emberiza shah* in the Paris Museum was likewise considered by him to be identical with ordinary *E. hortulana*. Eastern specimens, however, are always of a clearer and brighter colour than the western ones, but I do not think there is sufficient difference on which to found a subspecific distinction.

87. Emberiza buchanani.

Emberiza huttoni, Jerd.; Blanf. East. Persia, ii. p. 258 (1876); Scully, Ibis, 1881, p. 575; C. Swinh. Ibis, 1882, p. 113; Homeyer & Taneré, MT. orn. Ver. Wien, 1883, p. 90; Severtz. Ibis, 1883, p. 61.

Emberiza buchanani, Blyth; Bidd. Ibis, 1881, p. 80; Sharpe, Cat. B. Brit. Mus. xii. p. 533 (1888); id. Trans. Linn. Soc. (2) Zool. v. pt. 3, p. 81 (1889).

Nos. 846, 847, 848. North of Sháhidúla, October 21, 1873.

No. 1674. South-west of Ighiz Yar, May 18, 1874.

88. Emberiza cia.

Emberiza cia, L.; Severtz. Turkest. Jevotn. p. 64 (1873); Dresser, Ibis, 1875, p. 247; Blanf. East. Persia, ii. p. 257 (1876); Sharpe, Cat. B. Brit. Mus. xii. p. 537 (1888).

Nos. 1411, 1412, ♂ ♀. Akdarra [Aktala], March 22, 1874.

The birds appear to be the true *E. cia* and not the Himalayan race *E. stracheyi*.

Dr. Stoliczka notices this Bunting in his 'Diary' on the above date. He says :—"I shot a male and female of what appears to be *Emberiza cia*, apparently a new-comer to the country."

No. 1504, ♂. Panjah, April 14–23, 1874.

Colonel Biddulph says that, to the best of his knowledge, this species was not seen anywhere in Yarkand. He procured specimens in Wakhán in April.

89. Emberiza stracheyi.

Emberiza stracheyi, Moore; Wardlaw Ramsay, Ibis, 1880, p. 65; Bidd. Ibis, 1881, p. 79; Scully, t. c. p. 574; Sharpe, Cat. B. Brit. Mus. xii. p. 539 (1888).

Emberiza cia (nec L.); Hume & Henders. Lahore to Yark. p. 256 (1873).

No. 50, ♂. Murree, June 26, 1873.

No. 62. Murree, June 29, 1873.

No. 278, ♂. Gond, August 8, 1873.

Nos. 286, 289, ♂ ♀. Gaganghir, August 9, 1873.—Length 4·8 inches, wing 2·6, tail 1·9; bill from front 0·35, from gape 0·56; tarsus 0·7. Iris dark brown; bill brown, yellow below; feet leaden grey; inside of mouth yellow.

No. 315, ♀. Sonámarg, August 10, 1873.

Nos. 371, 374. Baltal, August 12, 1873.

No. 480. Shargol, August 20, 1873.

This Bunting, according to Dr. Henderson, was common all through Kashmir from above Jamu to near the Zoji-lá Pass; beyond this it was not met with.

90. Emberiza godlewskii.

Emberiza godlewskii, Taez.; Prjev. in Rowley's Orn. Misc. ii. p. 308 (1877); Sharpe, Cat. B. Brit. Mus. xii. p. 542 (1888).

No. 1413. Akdarra [Aktala], March 22, 1874.

On the 24th of March Colonel Biddulph shot a couple of male birds, one adult and one immature, in the Kirog Valley. These two specimens he gave to Mr. Mandelli, and they passed with the rest of the Mandelli Collection into Mr. Hume's hands, and they are now in the British Museum (*cf.* Sharpe, *l. c.*).

91. Emberiza stewarti.

Emberiza stewarti, Blyth; Dresser, Ibis, 1875, p. 248; Wardlaw Ramsay, Ibis, 1879, p. 446, 1880, p. 65; Bidd. Ibis, 1881, p. 81; Scully, t. c. p. 575; C. Swinh. Ibis, 1882, p. 113; Bidd. ibid. p. 282; Sharpe, Cat. B. Brit. Mus. xii. p. 547 (1888).

Emberiza caniceps, Gould; Severtz. Turkest. Jevotn. p. 64 (1873).

No. 77. Murree, July 2, 1873.

No. 83. Changligally, near Murree, July 2, 1873.

No. 121. Chuttrebelas, July 16, 1873.

No. 189, ♀. Srinagar, July 28, 1873.

92. Emberiza leucocephala.

Emberiza leucocephala, Gm.; Hume & Henderson, Lahore to Yark. p. 254 (1873); Dresser, Ibis, 1875, p. 248; Finsch, Verh. z.-b. Ges. Wien, xxix. p. 215 (1879); Bidd. Ibis, 1881, p. 79; Scully, t. c. p. 574; C. Swinh. Ibis, 1882, p. 113; Bidd. ibid. p. 282; Severtz. Ibis, 1883, p. 60; Sharpe, Cat. B. Brit. Mus. xii. p. 549 (1888); id. Trans. Linn. Soc. (2) Zool. v. pt. 3, p. 81 (1889).

Emberiza pityornis, Pall.; Severtz. Turkest. Jevotn. p. 64 (1873); Prjev. in Rowley's Orn. Misc. ii. p. 307 (1877); Homeyer & Taneré, MT. orn. Ver. Wien, 1883, p. 90.

No. 888. Sanju, October 27, 1873. [An adult male in winter plumage.]

No. 1477. Panjah, April 16, 1874.—Length 7·3 inches, wing 3·6, tail 3·0, tarsus 0·4; bill from front 0·4, from gape 0·5. Iris brown; bill dusky, lower mandible pale bluish; feet fleshy brown, soles yellowish.

This species was met with by Dr. Henderson in October in large flocks near Sonámarg in the Sind Valley. They had probably been driven down from the pine-forests above by a fall of snow which had occurred a few days previously.

Genus **MELOPHUS.**

93. Melophus melanicterus.

Melophus melanicterus (Gm.); Sharpe, Cat. B. Brit. Mus. xii. p. 568 (1888).

♂ ad. No locality.

No. 122, ♂ ad. Chuttrebelas, July 16, 1873.

Family ALAUDIDÆ.

Genus **OTOCORYS.**

94. Otocorys pallida.

Otocorys penicillata (nec Gould); Severtz. J. f. O. 1875, p. 191; Scully, Str. F. iv. p. 174 (1876); Dresser, Ibis, 1876, p. 181; Severtz. Ibis, 1883, p. 61.
Otocorys pallida, Sharpe, Cat. B. Brit. Mus. xiii. p. 533 (1890).

Nos. 938, 939, ♂ ad. Sanju, October 31.—Wing 4·7–4·85 inches.

No. 892, [♀] ad. Sanju, October 28.—Length 7·65 inches, wing 4·4, tail 3·05, tarsus 0·9. Bill bluish horny, blackish towards the tip, pale below; iris brown.

All three in full winter plumage, in which stage it is extremely difficult to tell some of the specimens from *O. albigula*, because the black feathers on the sides of the face and chest-band are rather broadly edged with white, and then the accumulation of these white edges, in a carelessly prepared skin, gives a pale appearance between the ear-coverts and the chest-band which may render the skins easily mistaken for *O. brandti*.

No. 945, ♀ ad. Sanju, November 1.—Wing 4·35 inches.

No. 927, ♀ ad. Khushtágh, November 2.—Wing 4·4 inches.

No. 940, ♀ ad. Oi-tográk, November 3.—Wing 4·2 inches.

All the above females have the throat-patch obscured by ashy-whitish margins.

No. 952, ♂ ad. Bora, November 4.—Wing 4·6 inches.

Has a slight tinge of yellow on the forehead. The pale margins have almost vanished from the throat-patch, but are a little more distinct on the ear-coverts; the black band across the hinder crown is becoming pronounced.

No. 967, ♂ ad. Kárghalik, November 6.—Wing 4·65 inches.

Very similar to the foregoing specimen, but the frontal band is not so distinct.

No. 991, ♀. Yarkand, November 10.—Wing 4·5 inches.

No. 1046, ♂. Yarkand, November 23.—Wing 4·2 inches.

The male does not show much advance on the specimens killed earlier in the month, but there are certain signs of disappearance of the winter plumage in the development of black on the frontal band and ear-tufts; there is also a slight strengthening of the line at the base of the forehead, which, however, is never absent in winter-plumaged males, but is scarcely visible in the females.

No. 1115, ♂. Yangihissár, December 2.—Wing 4·85 inches.

Nos. 1132, 1136, 1149, 1152, ♂. Kashghar, December 11–16.—Wing 4·6–4·75 inches.

No. 1252, ♂. Marálbáshi, January.—Wing 4·7 inches.

In all the above specimens there is a slight indication of approaching nuptial plumage.

No. 1305, ♂. Kashghar, February 4.—Wing 4·8 inches.

The black on the crown, sides of face, and throat is so strongly developed that there is scarcely any indication of light edgings left.

No. 1440, ♀. Tashkúrghán, March 30.—Wing 4·4 inches.

This is rather a curious bird, for, although it was shot in the spring, and by the black

streaking of its head shows decided approach to nuptial dress, yet the forehead, sides of face, and throat are decidedly tinged with yellow, as in autumn.

Nos. 1502, 1508, 1509, ♂. Panjah, April 14–23.—Wing 4·65–4·8 inches.

No. 1503, ♀ ad. Wing 4·4 inches.

In spring plumage without a trace of the winter markings, all of which have disappeared by the shedding of the edges to the feathers. I must confess that in full plumage the pale race of Horned Lark approaches more nearly to *O. penicillata*, but it never quite loses the ochraceous tint which is the distinguishing character of the race.

Dr. Stoliczka's 'Diary' states that this species was not uncommon near Oi-tográk on the 3rd of November. Near Yangihissár it was very common early in December. At Tashkúrghán he notes:—"*Otocoris* comes up here, I suppose to breed."

Dr. Scully procured specimens in the desert between Sulik Aziz Langar and Sanju, in August, at the foot of the hills, and in the mountains it was observed in some most desolate places, even at elevations of about 17,000 feet. He states that it was common in Eastern Turkestan in winter, frequenting the open bare steppes. "When riding out of Kashghar, on the journey to Yarkand, for instance, *Galerita magna* would at first be very numerous about habitations, &c.; then on the borders of cultivation *G. magna* and the present species would be found together, overlapping as it were; while a little further on, on the stony steppe, *G. magna* would cease and be replaced entirely by *Otocorys*. At the approach of summer the species under consideration quits the plains for the surrounding hills, whither it repairs to breed. The Turki name is 'Kara Kash Toghai,' *i. e.* 'Black-browed Lark.' It is also sometimes called 'Sai Toghai,'='Steppe Lark.'"

95. Otocorys elwesi.

Otocorys elwesi, Blanford, J. A. S. Beng. xli. p. 62 (1872); Severtz. Ibis, 1883, p. 61; Sharpe, Cat. B. Brit. Mus. xiii. p. 534 (1890); Oates, Faun. Brit. Ind., Birds, ii. p. 321 (1890).

Otocorys longirostris (nec Moore); Hume & Henders. Lahore to Yark. p. 267 (1873); Dresser, Ibis, 1876, p. 181.

No. 650, ♀ ad. North of Leh, September 8, 1873.—Culmen 0·55 inch, wing (moulting) 4·1.

No. 776, ♂ ad. Chagra, September 21, 1873.—Culmen 0·55 inch, wing 4·65.

No. 810, ♂ ad. North of Suget Pass, October 16, 1873.—Wing 4·6 inches.

No. 940, ♂ ad. Kárghalik, November 6, 1873.—Culmen 0·6 inch, wing 4·3.

♂ ad. Aktágh, June 14, 1874.—Culmen 0·55 inch, wing 4·45. Iris hazel; bill bluish black, albescent at base of lower mandible; feet fleshy-brownish black, the soles albescent.

♀ ad. Aktágh, June 14, 1874.—Culmen 0·5–0·55 inch, wing 4·3. Iris dark hazel; bill bluish dusky, paler at base of lower mandible; feet fleshy dark brown, the tarsi paler behind, soles albescent.

In Dr. Stoliczka's 'Diary' occurs the following note:—"Wahábjilga, June 14, 1874. I shot several specimens of an *Otocorys* which is as small as *O. penicillata*, but has the black divided at the sides of the throat like *O. longirostris*. Is this not *O. elwesi* of Blanford? I have not seen it north of Aktágh. It is evidently the same which Biddulph shot last year at Kizil Jilga. I am not sure whether it is not a permanent inhabitant of the hills, while

O. longirostris is found on the Himalayas of the Indus Valley and very likely goes to the plains in part during the winter."

In the Hume Collection are a number of specimens from the Central-Asian Expeditions, with the following localities:—Tanksi (*Henderson*), Pangong Lake (*Henderson*), Aktágh (*Biddulph*), Karakash Valley (*Henderson*). Dr. Henderson procured both this species and the long-billed form at Tanksi.

96. Otocorys longirostris.

Otocorys longirostris, Moore, P. Z. S. 1855, p. 215, pl. 3 (*ex* Gould MSS.); Scully, Ibis, 1881, p. 581; Biddulph, Ibis, 1882, p. 285; Dresser, Ibis, 1884, p. 116; Sharpe, Cat. B. Brit. Mus. xiii. p. 536 (1890); Oates, Faun. Brit. Ind., Birds, ii. p. 320 (1890).

No. 501, ♂ ad. Above Kharbu, 14,000 feet, August 22, 1873.—Culmen 0·7 inch, wing 4·85. Iris chocolate-brown; bill dusky horny; feet dark horny brown, slightly bluish on the tarsi, soles albescent.

No. 502, ♀ ad. Above Kharbu, 14,000 feet, August 22, 1873.—Culmen 0·65 inch, wing 4·65.

These measurements scarcely exceed those of *O. elwesi*, but some allowance has to be made for the worn condition of the specimen, which is in full breeding-plumage. (*Cf.* Stoliczka's note, *infrà*.)

Nos. 508, 509, 510, nestlings. Kharbu, August 22, 1873.

No. 697, ♂ ad. Tsúltak, North of Changla, 15,500 feet, September 15, 1873.

No. 758, ♂ ad. Lukung, September 20, 1873.—Culmen 0·65 inch, wing 5·1.

No. 774, ♂ ad. Chagra, September 21, 1873.—Culmen 0·7 inch, wing 5.

In Dr. Stoliczka's 'Diary' he writes:—"Kharbu, August 22, 1873. I shot a male and female and three young of *O. longirostris* at about 15,000 to 16,000 feet high." He also saw a great number of this species at Rimdi on the 22nd of September.

Specimens from the Pangong Lake and Tanksi are in the Hume Collection. They were collected by Dr. Henderson, who states that this Horned Lark was met with from the first pass above Leh until the Expedition left the Karakash Valley going to Yarkand. It was usually found near water at from 12,000 to about 15,000 feet. It is not quite certain to me that Dr. Henderson recognized the differences between the Horned Larks, as his specimens from the Karakash Valley were *O. elwesi*.

97. Otocorys brandti.

Otocorys brandti, Dresser, B. Eur. iv. p. 402 (1874); id. Ibis, 1876, p. 181; Sharpe, Cat. B. Brit. Mus. xiii. p. 536 (1890).

Otocorys parvexi, Tacz. Bull. Soc. Zool. France, i. p. 161 (1876).

Otocorys petrophila, Severtz. J. f. O. 1873, p. 379.

Alauda brandti, Homeyer & Tancré, MT. orn. Ver. Wien, 1883, p. 90.

No. 1203, ♀ ad. Kashghar, January 15, 1874.—Culmen 0·5 inch, wing 4·3.

No. 1211, ♀ ad. Kashghar, January 19, 1874.—Culmen 0·55 inch, wing 4·15.

No. 1299, ♀ ad. Kashghar, February 3, 1874.—Culmen 0·5 inch, wing 4·25.

No. 1501, ♀ ad. Panjah, April 14–23, 1874.—Culmen 0·5 inch, wing 4·1.

A female of this Horned Lark was procured by Dr. Henderson on the Khoosh Maidan in Yarkand in September.

Genus **MELANOCORYPHA.**

98. Melanocorypha bimaculata.

Melanocorypha bimaculata (Ménétr.) ; Severtz. Turkest. Jevotn. pp. 67, 143 (1873); Blanf. East. Persia, ii. p. 244 (1876); Dresser, Ibis, 1876, p. 183; Bidd. Ibis, 1881, p. 89; Scully, t. c. p. 580; C. Swinh. Ibis, 1882, p. 115; Scully, J. A. S. Beng. lvi. p. 84 (1887); Sharpe, Trans. Linn. Soc. (2) Zool. v. p. 82 (1889); id. Cat. B. Brit. Mus. xiii. p. 555 (1890); Oates, Faun. Brit. Ind., Birds, ii. p. 323 (1890).

Melanocorypha torquata, Blyth; Hume & Henders. Lahore to Yark. p. 265, pl. xxvii. (1873); Scully, Str. F. iv. p. 173 (1876).

Melanocorypha bimaculata, β. minor, Severtz. Turkest. Jevotn. p. 67 (1873); Dresser, Ibis, 1876, p. 183.

No. 1013, ♂. Yarkand, November 12, 1873.—Length 7·7 inches, wing 4·8, tail 2·4, tarsus 1·05; expanse 15·2; bill from front 0·73, from gape 0·85; length of foot 1·85; wings reach within 0·5 of end of tail. Iris brown; bill bluish horny above and on the basal half of lower mandible, yellow at the sides and tip.

No. 1292. Kashghar, February 1, 1874.—Length 7 inches, wing 4·43, tail 2·15, tarsus 1·1; expanse 13·9; bill from front 0·62, from gape 0·75; length of foot 1·8. Iris dark brown; bill dusky, pale below, yellowish at the base; feet fleshy white; claws dusky.

No. 1293. Kashghar, February 1, 1874.—Length 7·6 inches, wing 4·83, tail 2·35, tarsus 1·13; expanse 14·7; bill from front 0·65, from gape 0·8; length of foot 1·92; hind toe with claw 0·83, claw alone 0·45; middle toe from the root 0·94, greatest breadth 1·37; height of bill 0·32; wings reach within 0·4 of end of tail. Iris dark brown; bill dusky, pale below, yellowish at base; feet fleshy white.

Dr. Henderson procured a specimen of this species on the return journey, at the foot of the hills leading from Kashmir to the plains of the Punjab. Dr. Scully writes:—"Three specimens of this bird were obtained in Yarkand in February, but it was not seen after that, except some cage-birds. It is said to be very plentiful in the neighbourhood of Ili (Kulja), and only to visit Kashghar and Yarkand in January and February. The species is a very favourite cage-bird with the Kashgharians, on account of its sweet song. A specimen was brought to me in June, which sang most beautifully, and the owner wanted twenty tangas (Rs. 4) for it. The Turki name is *Ili Toghai,* i. e. the 'Ili Lark.'"

Genus **ALAUDA.**

99. Alauda cantarella.

Alauda arvensis, L.; Severtz. Turkest. Jevotn. p. 67 (1873); Blanf. East. Persia, ii. p. 239 (1876); Prjev. in Rowley's Orn. Misc. ii. p. 314 (1877); Finsch, Verh. z.-b. Ges. Wien, xxix. p. 221 (1879); Bidd. Ibis, 1881, p. 89; C. Swinh. Ibis, 1882, p. 116; Homeyer & Tancré, MT. orn. Ver. Wien, 1883, p. 90; Radde, Ornis, iii. p. 484 (1887); St. John, Ibis, 1889, p. 173; Sharpe, Trans. Linn. Soc. (2) Zool. v. p. 81 (1889); id. Cat. B. Brit. Mus. xiii. p. 567 (1890); Oates, Faun. Brit. Ind., Birds, ii. p. 324 (1890).

Alauda cantarella, Bp. Iconogr. Faun. Ital. Ucc. p. 5 (1841).

Alauda dulcivox, Hodgs.; Bidd. Ibis, 1881, p. 89; Scully, t. c. p. 582.

Alauda triborhyncha (nec Hodgs.), Hume & Henders. Lahore to Yark. p. 268, pl. xxviii. (1873).

No. 1197. Artish, north of Kashghar, January 11, 1874.
No. 1238. Marálbáshi, January 1874.
Nos. 1263, 1302, 1311, 1312, 1326, 1348, 1370. Kashghar, January 24 to February 11, 1874.
No. 1407. Ighiz Yar, March 22, 1874.
No. 1454. Pámirkul, April 5, 1874.
No. 1546. Panjah, April 24, 1874.—Bill bluish dusky above, pale whitish below; feet fleshy brown; tarsi paler; claws horny brown; iris dark brown. Length 7 inches, wing 4, tail 2·6, tarsus 0·9.
Nos. 1552, 1554. Panjah, April 25, 1874.

Dr. Stoliczka notes that on the 12th of January *A. dulcivox* seemed to be common near Kashghar, but it was said not to remain there during the summer. Colonel Biddulph procured specimens near Kashghar in February.

100. Alauda liopus.

Alauda liopus, Hodgs. in Gray's Zool. Misc. p. 84 (1844); Sharpe, Cat. B. Brit. Mus. xiii. p. 574, sub *A. arvensis* (1890).
Alauda gulgula (nec Frankl.), Hume & Henders. Lahore to Yark. p. 269 (1873, nec pl. xxix.).
Alauda guttata, Brooks; Bidd. Ibis, 1881, p. 90; Scully, t. c. p. 583; id. J. A. S. Beng. lvi. p. 84 (1887).

Nos. 161, 162. Sopur, July 26, 1873.
No. 213. Srinagar, July 30, 1873.
No. 301. Sonámarg, August 10, 1873.—Bill horny; feet brownish fleshy; tarsi fleshy; iris brown. Length 6·75 inches, wing 4·1, tail 2·65, tarsus 0·95.
Nos. 318, 337, 341, 360. Sonámarg, August 10–12, 1873.
No. 423, juv. Dras, August 16, 1873.
Nos. 601, 621. Leh, August 31, 1873.
No. 708. Tanksi, September 16, 1873.

Dr. Henderson obtained a specimen of this Lark in May near Srinagar, and Colonel Biddulph met with it in the Nubra valley on the 25th of June, and again at Leh on the 5th of September. Several references to the species occur in Dr. Stoliczka's 'Diary,' but none are of any importance. He says that it was common near Tanksi in September.

Genus **CALANDRELLA.**

101. Calandrella tibetana.

Calandrella tibetana, Brooks, Str. F. viii. p. 488 (1880); Sharpe, Cat. B. Brit. Mus. xiii. p. 585 (1890); Oates, Faun. Brit. Ind., Birds, ii. p. 329 (1890).

A specimen of this short-toed Lark from Cashmere, collected by Dr. Henderson, is in the Hume Collection. Colonel Biddulph obtained a specimen in the Indus Valley on the 24th of June. He also procured one at Chassi Yassin in August.

102. Calandrella acutirostris.

Calandrella brachydactyla (nec Leisl.), Hume & Henders. Lahore to Yark. p. 264 (1873); Scully, Str. F. iv. p. 172 (1876); Wardlaw Ramsay, Ibis, 1880, p. 67.

Calandrella acutirostris, Hume, in Lahore to Yark. p. 265 (1873); Sharpe, Cat. B. Brit. Mus. xiii. p. 585 (1890); Oates, Faun. Brit. Ind., Birds, ii. p. 327 (1890).

No. 428. Tashgam, August 17, 1873.

Nos. 539, 566, 593, 598, 600. Leh, August 27–31, 1873.

No. 587. Leh, August 30, 1873.—Bill dark horny along the ridge, yellowish at the sides; feet pale dusky horny; tarsi fleshy brownish; iris brown. Length 6·6 inches, wing 3·82, tail 2·75, tarsus 0·8.

Nos. 623, 629. Leh, September 4, 1873.

No. 649. Leh, September 8, 1873.—Bill dusky horny along the ridge and on tip, the rest fleshy brown; feet dusky; tarsi fleshy brown; iris brown.

No. 745. Lukung, September 19, 1873.

No 829. Nubra Valley, October (*Dr. Bellew*).

No. 907. Sanju, October 28, 1873.

No. 1470. Panjah, April 16, 1874.—Iris dark brown; bill livid, pale dusky horny along the culmen; feet dusky white; soles fleshy white. Length 6·1 inches, wing 3·5, tail 2·2, tarsus 0·83.

No. 1604. Sarikol, May 9, 1874.
"Eggs very small yet."

No. 1605. Sarikol, May 9, 1874. Bill dusky brown, pale yellowish at base; feet light brown; iris dark brown. Length 6·7 inches, wing 3·8, tail 2·65, tarsus 0·77.

Dr. Stoliczka states that this Lark was common near Lukung in September. Birds in breeding-plumage were got at Sarikol on the 9th of May, and in Dr. Stoliczka's opinion would have laid in about a fortnight.

Dr. Henderson did not distinguish between this species and *C. tibetana*, but his specimens show to which Lark the following note is to be referred:—"Several specimens of this species were obtained in Kashmir and Ladák, in both of which localities it may prove to breed, and numerous nestlings were procured near Balakchi and along the Karakash between the 31st of July and the 5th of August." Dr. Scully obtained the species in the same district, and he writes:—"It was only observed at Balakchi, and for a short distance along the Karakash River (elevation 12,000 feet), where it had evidently been breeding. The birds were numerous on the alluvial plains between Sháhidúla and Balakchi, and they ran about swiftly among the stones, flying off in flocks when alarmed. They uttered a short twittering note, and their flight was wavy, somewhat resembling that of a Wagtail."

Genus **ALAUDULA.**

103. Alaudula seebohmi.

Alaudula pispoletta (nec Pall.), Scully, Str. F. iv. p. 173 (1876).

? *Alaudula pispoletta*, Bidd. Ibis, 1881, p. 89.

Alaudula seebohmi, Sharpe, Cat. B. Brit. Mus. xiii. p. 590 (1890).

No. 947, ♂. Kárghalik, November 5, 1873.—Bill dusky bluish pale; feet fleshy; iris brown. Length 6·75 inches, wing 4·05, tail 2·93, tarsus 0·8.
Nos. 1045, 1051, 1054, 1055, 1057. Yarkand, November 24, 1873.
Nos. 1131, 1139, 1140, 1145, 1153, 1154, 1166. Kashghar, December 10–19, 1873.
No. 1213. Kashghar, January 20, 1874.—Bill pale greenish; feet light dusky brown; iris dark hazel. Length 6·5 inches, wing 3·75, tail 2·75, tarsus 0·8.
Nos. 1324, 1325. Kashghar, February 9, 1874.
No. 1835. Kugiár, June 1, 1874.

Colonel Biddulph procured specimens at Yangihissár on the 2nd of December, and at Kashghar in January. He states that the species was very common in the plains of Yarkand, during the winter at any rate. Dr. Scully writes:—"This species is a permanent resident in the plains of Kashgharia, where it breeds. It is much less common than *Galerita magna*, and is rather shy. It is usually found at some distance from habitations, frequenting waste sandy tracts and ground covered with efflorescence. It is a very whitish, desert-looking sort of bird, and a sweet songster, rising high in the air, and remaining fixed in one spot while it utters its note. In June, when it breeds, it is usually noticed about in pairs. The Turki name for this species is *Chulan toghai*, the word *Toghai* meaning 'Lark.'"

The Rev. Dr. Lansdell has more recently obtained the present species near Aksu. Dr. Henderson also got an immature specimen on the Karakash River.

Genus **GALERITA.**

104. Galerita magna.

Galerita magna, Hume, Ibis, 1871, p. 407; id. & Henders. Lahore to Yark. p. 270, pl. xxx. (1873); Severtz. Str. F. iii. p. 424 (1875); Scully, Str. F. iv. p. 175 (1876); Menzbier, Ibis, 1885, p. 354; Sharpe, Cat. B. Brit. Mus. xiii. p. 632, sub *G. cristata* (1890); Oates, Faun. Brit. Ind., Birds, ii. p. 337 (1890).

No. 889. Sanju, October 27, 1873.
No. 893, ♂. Sanju, October 28, 1873.—Length 8 inches, wing 4·53, tail 2·85, tarsus 1; expanse 14·4; bill from front 0·68, from gape 0·9; length of foot 1·6. Iris brown; bill greenish horny, pale below; feet whitish, with a greenish horny tinge.
No. 894, ♀. Sanju, October 28, 1873.—Length 7·65 inches, wing 4·2, tail 2·6, tarsus 0·95; expanse 13; bill from gape 0·82; length of foot 1·72. Iris brown; bill yellowish pale brown, pale below; feet whitish, with a slight greenish horny tinge.
Nos. 895, 896, 897, 898, 901, 902, 906, 909. Sanju, October 28, 1873.
No. 923. Sanju, October 29, 1873.
No. 993. Yarkand, November 10, 1873.
Nos. 1104, 1112. Yangihissár, December 2, 1873.
Nos. 1236, 1239. Marálbáshi, January 1874.
Nos. 1301, 1303. Kashghar, February 3, 1874.
No. 1373. Jigda, February 21, 1874.
No. 1738. Yarkand, May 15–20, 1874.

In the 'Catalogue of Birds' (vol. xiii. p. 626), I have shown that it is impossible to draw a line of distinction between the Crested Lark of Europe and the large pale race of Central Asia,

which Hume called *G. magna*. From the localities visited by the Expedition, all the specimens are easily recognizable as *G. magna*, and it is better to keep them under Mr. Hume's name.

Dr. Stoliczka mentions in his 'Diary' that *G. magna* was one of the most common birds in the fields near Yarkand in November. Colonel Biddulph says that it was very common in the plains all through the winter, and was breeding there in May.

Dr. Scully writes :—"This species is one of the commonest birds in the plains of Kashgharia, where it is a permanent resident. It is a very tame bird and frequents fields, roadways, and the vicinity of habitations generally. It is occasionally caged on account of its rather sweet song. This Lark breeds in May and June, making its nest on the ground in cultivated fields or in low grass. The Turki name for this bird is 'Kapak toghai,' sometimes called 'Popochek toghai,' *i. e.* 'Crested Lark.'"

The Rev. Dr. Lansdell, during his last journey through Central Asia, obtained specimens at Chadir Kul and Charwagh in August, and at Guma in September.

Family MOTACILLIDÆ.

Genus **MOTACILLA.**

105. Motacilla alba.

Motacilla alba, L.; Severtz. Turkest. Jevotn. p. 66 (1873); Dresser, Ibis, 1876, p. 176; Scully, Str. F. iv. p. 151 (1876); Blanf. East. Persia, iii. p. 232 (1876); Bidd. Ibis, 1881, p. 68; Scully, ibid. p. 451; C. Swinh. Ibis, 1882, p. 109; Bidd. ibid. p. 280; Severtz. Ibis, 1883, p. 80; Homeyer & Tancré, MT. orn. Ver. Wien, 1883, p. 85; Sharpe, Cat. B. Brit. Mus. x. p. 465 (1885); Scully, J. A. S. Beng. lvi. p. 85 (1887); Radde, Ornis, iii. p. 486 (1887); Sharpe, Trans. Linn. Soc. (2) Zool. v. p. 78 (1889); Oates, Faun. Brit. Ind., Birds, ii. p. 287 (1890).

Motacilla dukhunensis, Prjev. in Rowley's Orn. Misc. ii. p. 192 (1877).

Nos. 818, 822, 823. Sháhidúla, October 19, 1873.

No. 1541, ♂ ad. Panjah, April 24, 1874.—Bill black; feet black; iris dark brown. Length 8·2 inches, wing 3·8, tail 3·8, tarsus 0·92.

Dr. Scully shot a single specimen at Sanju on first entering Eastern Turkestan. The Turki name for this Wagtail is "Sunduk," and it is said to disappear entirely from Eastern Turkestan in winter.

106. Motacilla personata.

Motacilla personata, Gould; Severtz. Turkest. Jevotn. pp. 66, 139 (1873); Hume & Henders. Lahore to Yark. p. 224 (1873); Dresser, Ibis, 1876, p. 177; Scully, Str. F. iv. p. 150 (1876); Finsch, Verh. z.-b. Ges. Wien, xxix. p. 172 (1879); Wardlaw Ramsay, Ibis, 1880, p. 160; Bidd. Ibis, 1881, p. 68; Scully, ibid. p. 451; C. Swinh. Ibis, 1882, p. 109; Severtz. Ibis, 1883, p. 64; Homeyer & Tancré, MT. orn. Ver. Wien, 1883, p. 86; Sharpe, Cat. B. Brit. Mus. x. p. 479 (1885); id. Trans. Linn. Soc. (2) Zool. v. p. 78 (1889).

No. 166, ad. Sopur, July 26, 1873.

No. 277, young. Gond, August 8, 1873.

No. 314, ad. Sonámarg, August 12, 1873.

No. 431, juv. Tashgam, August 17, 1873.

No. 482, moulting. Shargol, Ladák, August 20, 1873.

No. 646, ad. Leh, September 7, 1873.

No. 655, ad. Leh, September 9, 1873.
No. 676, ad. Tikzag, September 12, 1873.
No. 696, ad. Tsúltak, N. of Changla, September 15, 1873.
No. 814, young. Sháhidúla, October 19, 1873.
No. 1019, ad. Yarkand, November 13, 1873.
No. 1158, ad. Kashghar, December 17, 1873.—Length 8·4 inches, wing 3·8, tail 3·9, tarsus 0·95; expanse 11·7; bill from front 0·5, from gape 0·73; length of foot 1·32. Iris blackish; bill black, paler at lower base; feet black.
No. 1274, ad. Kashghar, January 25, 1874.
No. 1499, ad. Panjah, April 14–23, 1874.
No. not given. Sarikol, May 9, 1874.—Length 7·6 inches, wing 3·56, tail 3·4, tarsus 0·92; expanse 11·5; bill from front 0·45, from gape 0·7; length of foot 1·2; spread of foot 0·95. Iris dark brown; bill black; feet black, soles dusky.
No. 1700. Yarkand, May 20, 1874.
No. 1796. Yarkand, May 27, 1874.
No. 1808. Kárghalik, May 29, 1874.

Dr. Stoliczka says that *M. personata* was moderately common near Sonámarg. He also states that it was not uncommon about Kashghar in December, and again near Panjah in April.

Dr. Henderson obtained the species at Oi-tográk in the plains of Yarkand, and others, as well as nestling birds, in August, along the Arpalák River. Generally, wherever there was water throughout Yarkand, similar Wagtails were observed.

"This species," says Dr. Scully, "is the common Wagtail of Eastern Turkestan, where it is found in great numbers throughout the plains, generally near habitations and streams of running water. It is most numerous from March to September, but some of these birds are certainly to be seen throughout the year. This Wagtail breeds in May, and is called in Turki 'Kok Sunduk,' *i. e.* 'Blue Wagtail.'"

On the 27th of May Dr. Stoliczka got the nest near Yarkand. "It breeds on the ground near the edge of the water. The nest is about 1·25 inches deep and about 2·5 inches in diameter, constructed of moss and grass, with a very thick lining of horse-hair inside. Eggs six, greenish white, dotted all over with dull inky brown. Out of the six eggs two were fresh and two were bad, and two contained live, almost fully-developed young. I saw a few other nests; they had from four to six young birds, just hatched."

107. Motacilla hodgsoni.

Motacilla luzoniensis (nec Scop.); Hume & Henders. Lahore to Yark. p. 223 (1873).
Motacilla personata, var. *melanonota*, Severtz. Turkest. Jevotn. pp. 67, 139 (1873).
Motacilla japonica (nec Swinh.); Dresser, Ibis, 1875, p. 177.
Motacilla hodgsoni, Blyth; Bidd. Ibis, 1881, p. 67; Scully, t. c. p. 451; Sharpe, Cat. B. Brit. Mus. x. p. 486 (1885); Oates, Faun. Brit. Ind., Birds, ii. p. 291 (1890).

No. 221. Srinagar, July 31, 1873.—Length 7·2 inches, wing 3·5, tail 3·1, tarsus 0·95; expanse 10·5; bill from front 0·5, from gape 0·75. Iris brown; bill black; feet black.
No. 260. Srinagar, August 5, 1873.

No. 306. Sonámarg, August 10, 1873.
No. 448. Chiliscambo, August 18, 1873.
No. 461. Kargil, August 19, 1873.

108. Motacilla campestris.

Motacilla campestris, Pall.; Sharpe, Cat. B. Brit. Mus. x. p. 510 (1885).
Budytes rayi, var. *flavifrons,* Severtz. Turkest. Jevotn. p. 67 (1873).
Budytes flavifrons, Severtz. Str. F. iii. p. 424 (1875).
Motacilla rayi, Dresser, Ibis, 1876, p. 178.
Budytes rayi, C. Swinh. Ibis, 1882, p. 109; Radde, Ornis, iii. p. 485.

No. not given. Sarikol, May 9, 1874.—Length 7 inches, wing 3·25, tail 2·8, tarsus 0·95; expanse 10·1; bill from front 0·5, from gape 0·68; length of foot 1·53, spread 1·1; middle toe 0·8, hind toe 0·65, hind claw 0·33; wings reach within 1·8 of end of tail. Iris brown; bill black; feet black, sole dull yellowish.

No. 1646. Sarikol, May 10, 1874.

109. Motacilla beema.

Motacilla beema, Sykes; Sharpe, Cat. B. Brit. Mus. x. p. 521, pl. vi. fig. 6 (1885); id. Trans. Linn. Soc. (2) Zoöl. v. p. 78 (1889); Oates, Faun. Brit. Ind., Birds, ii. p. 296 (1890).
Budytes flava (nec L.); C. Swinh. Ibis, 1882, p. 110.

No. 1557, ♂. Panjah, April 25, 1874.—Length 6·8 inches, wing 3·2, tail 2·8, tarsus 0·9; expanse 9·8; bill from front 0·46, from gape 0·7; length of foot 1·4, spread 1·05; middle toe 0·75, hind toe 0·68, hind claw 0·33; height of bill at the nostrils 0·13, its width the same. Iris hazel-brown; bill dusky black, paler below at base; feet brownish black, soles whitish cinereous. Wings reach within 1·8 inch of end of tail.

No. 1556, ♀. Panjah, April 25, 1874.—Length 6·6 inches, wing 3·05, tail 2·7, tarsus 1; expanse 9·8; bill from front 0·48, from gape 0·7; length of foot 1·5, spread of foot 1·1; middle toe 0·8, hind toe 0·7, hind claw 0·33; height of bill at the nostrils 0·15; wings reach within 1·75 of end of tail. Iris hazel; bill black; feet black.

Colonel Biddulph records this species as common in Wakhán in April. Dr. Stoliczka says that it evidently breeds near Panjah.

110. Motacilla feldeggii.

Motacilla melanocephala (nec Gm.); Dresser, Ibis, 1876, p. 178.
Budytes melanocephalus, Severtz. Turkest. Jevotn. p. 67 (1873); Blanf. East. Persia, ii. p. 235 (1876); Bidd. Ibis, 1881, p. 69; C. Swinh. Ibis, 1882, p. 109; Severtz. Ibis, 1883, p. 80; Scully, J. A. S. Beng. lvi. p. 83 (1887).
Motacilla feldeggii, Mich.; Sharpe, Cat. B. Brit. Mus. x. p. 527, pl. 8. figs. 1–4 (1885); Oates, Faun. Brit. Ind., Birds, ii. p. 297 (1890).

No. 1481. Panjah, April 17, 1874.—Length 6·9 inches, wing 3·2, tail 2·8, tarsus 0·95; expanse 10·2; bill from front 0·41, from gape 0·62; length of foot 1·55, spread of foot 1·13; middle toe 0·8, hind toe 0·7, hind claw 0·37. Iris dark brown; bill black; feet black, soles greenish. Wings reach within 1·25 inch of end of tail.

No. 1535, ♂ ad. Panjah, April 25, 1874.—Length 7 inches, wing 3·25, tail 2·8, tarsus 1;

expanse 10·25; bill from front 0·48, from gape 0·7; length of foot 1·45, spread of foot 1·1; middle toe 0·78, hind toe 0·65, hind claw 0·32; height of bill in region of nostrils 0·17, its width 0·16. Iris dark hazel; bill black; feet black, soles dusky cinereous.

No. 1650. Sarikol, May 10, 1874.

Writing from Panjah, Dr. Stoliczka says that this species evidently breeds in the neighbourhood.

111. Motacilla melanope.

Motacilla sulphurea, Bechst.; Severtz. Turkest. Jevotn. p. 67 (1873); Blanf. East. Persia, ii. p. 233 (1876).

Calobates melanope (Pall.); Prjev. in Rowley's Orn. Misc. ii. p. 193 (1877); Bidd. Ibis, 1881, p. 68; Scully, t. c. p. 542; C. Swinh. Ibis, 1882, p. 109.

Motacilla melanope, Dresser, Ibis, 1876, p. 177; Wardl. Ramsay, Ibis, 1880, p. 60; Severtz. Ibis, 1883, p. 64; Sharpe, Cat. B. Brit. Mus. x. p. 499 (1885); Oates, Faun. Brit. Ind., Birds, ii. p. 293 (1890).

Calobates sulphurea, Hume & Henders. Lahore to Yark. p. 224 (1873); Homeyer & Tancré, MT. orn. Ver. Wien, 1883, p. 86.

Motacilla boarula, Radde, Ornis, iii. p. 485 (1887).

No. 466. Kargil, August 19, 1873.

No. 825. Sháhidúla, October 19, 1873.

Colonel Biddulph obtained this species near Sonámarg on the 17th of July, and in the Indus Valley on the 6th of the same month. Dr. Henderson shot a specimen at Kargil in Ladák on the 23rd of October.

112. Motacilla citreola.

Motacilla citreola, Pall.; Prjev. in Rowley's Orn. Misc. ii. p. 193 (1877); Dresser, Ibis, 1876, p. 178; Finsch, Verh. z.-b. Ges. Wien, xxix. p. 175 (1879); Sharpe, Cat. B. Brit. Mus. x. p. 503 (1885); id. Trans. Linn. Soc. (2) Zool. v. p. 78 (1889); Oates, Faun. Brit. Ind., Birds, ii. p. 298 (1890).

Budytes citreola, Severtz. Turkest. Jevotn. pp. 67, 139 (1873); Blanf. East. Persia, ii. p. 235 (1876); Scully, Str. F. iv. p. 151 (1876); Prjev. in Rowley's Orn. Misc. ii. p. 193 (1877); Bidd. Ibis, 1881, p. 69; Scully, t. c. p. 452; C. Swinh. Ibis, 1882, p. 110; Severtz. Ibis, 1883, p. 80.

No. 479, adult. Shargol, August 20, 1873.

No. 716, imm. Tanksi, September 17, 1873.

No. 738, imm. Tanksi, September 18, 1873.

No. not given, ♀ imm. Sarikol, May 9, 1874.—Length 7 inches, wing 3·12, tail 2·9, tarsus 0·92; expanse 10; bill from front 0·5, from gape 0·68; length of foot 1·55, spread 1·1; middle toe 0·78, hind toe 0·73, hind claw 0·4; wings reach within 1·9 of end of tail. Iris brown; bill black; feet black, soles greenish yellow-brown.

No. 1607, ♂ adult. Sarikol, May 9, 1874.—Length 7·5 inches, wing 3·5, tail 3·25, tarsus 1·1; expanse 11; bill from front 0·52, from gape 0·76; length of foot 1·7, middle toe 0·8, hind toe 0·76, hind claw 0·4; wings reach within 1·85 of end of tail. Iris brown; bill black; feet black, soles yellowish.

No. 1308, ♂ adult. Sarikol, May 9, 1874.—Length 7·5 inches, wing 3·42, tail 3·1, tarsus 1·1; expanse 11; bill from front 0·52, from gape 0·75; length of foot 1·65, spread

1·2; middle toe 0·8, hind toe 0·78, hind claw 0·4; wings reach within 1·9 of end of tail.

No. 1647. Sarikol, May 10, 1874.

Dr. Scully writes:—"This species was very common in the plains from March to August, and was met with in the valley of the Karakash at an elevation of about 12,000 feet near the end of the latter month; it was never observed in winter. The bird was never seen near houses, but always in swampy ground and about marshes. It breeds probably about the month of May, as quite a young nestling was obtained on the 15th June. The Turki name for this species is 'Sarik Sunduk,' *i. e.* the Yellow Wagtail."

113. Motacilla citreoloides.

Budytes citreoloides, Hume & Henders. Lahore to Yark. p. 224 (1873); Homeyer & Tancré, MT. orn. Ver. Wien, 1883, p. 86.

Budytes citreola, var. *melanonota*, Severtz. Turkest. Jevotn. pp. 67, 139 (1873).

Motacilla citreoloides, Dresser, Ibis, 1876, p. 178; Sharpe, Cat. B. Brit. Mus. x. p. 507 (1885); Oates, Faun. Brit. Ind., Birds, ii. p. 299 (1890).

Budytes calcaratus, Blyth; Bidd. Ibis, 1881, p. 69; Scully, t. c. p. 452; C. Swinh. Ibis, 1882, p. 110; Bidd. t. c. p. 280; Severtz. Ibis, 1883, p. 63.

Nos. 404, 405, imm. Mataian, August 14, 1873.

No. 434, imm. Tashgam, August 17, 1873.

No. 586, imm. Leh, August 30, 1873.—Length 7 inches, wing 3·1, tail 2·9, tarsus 0·9; expanse 9·6; bill from front 0·5, from gape 0·73; length of foot 1·7, hind claw 0·45. Iris brown; bill black; feet black.

No. 617, imm. Leh, September 4, 1873.

No. 653, imm. Leh, September 9, 1873.

No. 1605, ♂ adult. Sarikol, May 9, 1874 (*Capt. Trotter*).

No. 1606, ♂ adult. Sarikol, May 9, 1874.—Length 7·4 inches, wing 3·45, tail 3·1, tarsus 1·13; expanse 10·9; bill from front 0·52, from gape 0·75; length of foot 1·8, spread 1·25; middle toe 0·85, hind toe 0·9, hind claw 0·5; wings reach within 1·9 of end of tail. Iris dark brown; bill black; feet brownish black, soles yellowish.

Colonel Biddulph obtained specimens at Dras and Kargil in July.

Genus **ANTHUS.**

114. Anthus trivialis.

Pipastes arboreus, Hume & Henders. Lahore to Yark. p. 226 (1873).

Anthus trivialis (L.); Dresser, Ibis, 1876, p. 179; Blanf. East. Persia, ii. p. 235 (1876); Bidd. Ibis, 1881, p. 70; Scully, t. c. p. 452; C. Swinh. Ibis, 1882, p. 110; Sharpe, Cat. B. Brit. Mus. x. p. 545 (1885); Oates, Faun. Brit. Ind., Birds, ii. p. 302 (1890).

Anthus arboreus, Severtz. Turkest, Jevotn. pp. 67, 139 (1873); Homeyer & Tancré, MT. orn. Ver. Wien, 1883, p. 86; Radde, Ornis, iii. p. 485 (1887).

Pipastes agilis (nec Sykes); Stoliczka, Str. F. ii. p. 463 (1874).

Anthus microrhynchus, Severtz. Ibis, 1883, p. 63.

No. 609. Leh, August 3, 1873.

No. 620. Leh, September 4, 1873.
No. 641. Leh, September 9, 1873.
No. 756. Lukung, September 20, 1873.
No. 1479, ♂ adult. Panjah, April 17, 1874.—Bill dusky black above, fleshy at lower base, dusky at tip; feet fleshy, soles white; iris dark brown. Length 7·0 inches, wing 3·7, tail 2·8, tarsus 0·9.
No. 1516, ♂ adult. Panjah, April 23, 1874.
No. 1582, adult. Langarkish, April 26, 1874.

Colonel Biddulph procured a female bird at Leh on the 4th of September, and a male at Tanksi (13,200 feet) on the 14th of September.

Dr. Henderson obtained numerous specimens in the neighbourhood of Sanju and Oi-tográk in the plains of Yarkand, where they were found in the fields among cultivation.

115. Anthus similis.

Agrodroma jerdoni (Finsch); Hume & Henders. Lahore to Yark. p. 227, pl. xxi. (1873); Wardlaw Ramsay, Ibis, 1880, p. 61.
Anthus sordidus (nec Rüpp.); Blanf. East. Persia, ii. p. 237 (1876).
Anthus jerdoni, Sharpe, Cat. B. Brit. Mus. x. p. 562 (1885).
Anthus similis, Jerd.; Oates, Faun. Brit. Ind., Birds, ii. p. 306 (1890).

Nos. 130, 131. Tinali, July 18, 1873.

Dr. Henderson obtained a specimen at the foot of the hills leading into Kashmir.

116. Anthus richardi.

Anthus richardi, V.; Blanf. East. Persia, ii. p. 236 (1876); Sharpe, Cat. B. Brit. Mus. x. p. 564 (1885).
Corydalla richardi, Scully, Str. F. iv. p. 152 (1876); Prjev. in Rowley's Orn. Misc. ii. p. 195 (1877); Oates, Faun. Brit. Ind., Birds, ii. p. 307 (1890).

Dr. Scully writes:—"This species is a seasonal visitant to Eastern Turkestan, where it breeds; it was observed on several occasions in June and in July, but was never met with in winter. The bird frequents undulating ground covered with short grass, and is very shy. It runs about very swiftly in the uneven ground which it affects, and its flight is strong and undulating. Its note, which it utters as it rises, is a sweet soft twitter. It probably hatches about the beginning of July, as on the 31st of that month some young birds of this species were seen between Igarchi and Posgam. The Turki name for this bird is 'Sairam,' which means 'singing.'"

117. Anthus campestris.

Anthus campestris (L.); Severtz. Turkest. Jevotn. pp. 67, 141 (1873); Dresser, Ibis, 1876, p. 178; Blanf. East. Persia, ii. p. 237 (1876); Bidd. Ibis, 1881, p. 70; C. Swinh. Ibis, 1882, p. 110; Homeyer & Tancré, MT. orn. Ver. Wien, 1883, p. 86; Sharpe, Cat. B. Brit. Mus. x. p. 570 (1885); id. Trans. Linn. Soc. (2) Zool. v. p. 79 (1889); Oates, Faun. Brit. Ind., Birds, ii. p. 309 (1890).
Agrodroma campestris, Prjev. in Rowley's Orn. Misc. ii. p. 195 (1877).

No. 1466. Panjah, April 14–23, 1874.

118. Anthus pratensis.

Anthus pratensis (L.); Severtz. Turkest. Jevotn. pp. 67, 139 (1873); Dresser, Ibis, 1876, p. 179; Blanf. East. Persia, ii. p. 236 (1876); Prjev. in Rowley's Orn. Misc. ii. p. 194 (1877); Homeyer & Tancré, MT. orn. Ver. Wien, 1883, p. 86; Sharpe, Cat. B. Brit. Mus. x. p. 580 (1885); Radde, Ornis, iii. p. 485 (1887).

No. 1159. Kashghar, December 17, 1873.—Length 6·25 inches, wing 3·1, tail 2·3, tarsus 0·8; expanse 9·8; bill from front 0·44, from gape 0·62; length of foot 1·7, hind claw 0·5; wings reach within 1·3 of end of tail. Iris blackish brown; bill horny, pale fleshy below, dark at tip; feet pale dusky, tarsi paler. (*Capt. Trotter.*)

No. 1333. Kashghar, February 10, 1874.

Dr. Stoliczka says that this bird was not uncommon near water in December.

119. Anthus cervinus.

Anthus cervinus (Pall.); Dresser, Ibis, 1876, p. 180; Blanf. East. Persia, ii. p. 236 (1876); Finsch, Verh. z.-b. Ges. Wien, xxix. p. 66 (1879); Bidd. Ibis, 1881, p. 70; Homeyer & Tancré, MT. orn. Ver. Wien, 1883, p. 86; Sharpe, Cat. B. Brit. Mus. x. p. 586 (1885); Oates, Faun. Brit. Ind., Birds, ii. p. 310 (1890).

Anthus cervinus, var. *rufogularis*, Severtz. Turkest. Jevotn. pp. 67, 140 (1873).

No. 1474, adult. Panjah, April 16, 1874.—Bill horny black, yellowish at base, dark at tips; feet fleshy brown, tarsi paler, soles pale yellow; iris brown. Length 6·5 inches, wing 3·45, tail 2·5, tarsus 0·9.

120. Anthus spipoletta.

Anthus aquaticus, Bechst.; Severtz. Turkest. Jevotn. p. 67 (1873); Scully, Str. F. iv. p. 152 (1876).

Anthus blakistoni, Swinh.; Bidd. Ibis, 1881, p. 70; Scully, ibid. p. 453; C. Swinh. Ibis, 1882, p. 110; Scully, J. A. S. Beng. lvi. p. 84 (1887).

Anthus spinoletta (L.); Dresser, Ibis, 1876, p. 180; Blanf. East. Persia, ii. p. 236 (1876); Prjev. in Rowley's Orn. Misc. ii. p. 194 (1877); Menzbier, Ibis, 1885, p. 354; Radde, Ornis, iii. p. 485 (1887); Oates, Faun. Brit. Ind., Birds, ii. p. 312 (1890).

Anthus spipoletta, Sharpe, Cat. B. Brit. Mus. x. p. 592 (1885); id. Trans. Linn. Soc. (2) Zool. v. p. 79 (1889).

No. 948. Sanju, November 1, 1873.

No. 1034. Yarkand, November 21, 1873.

Nos. 1078, 1083, 1085, 1089. Yarkand, November 28, 1873.

Nos. 1137, 1138. Kashghar, December 12, 1873.

No. 1157. Kashghar, December 17, 1873.—Length 7·3 inches, wing 3·75, tail 2·9, tarsus 0·9; expanse 11·7; bill from front 0·55, from gape 0·7; length of foot 1·6, hind claw 0·4; wings reach within 1·5 of end of tail. Iris dark brown; bill blackish fleshy, dark at tip; feet blackish horny brown.

Nos. 1205, 1207. Kashghar, Jan. 17, 1874.

No. 1218. Kashghar, January 20, 1874.—Length 7·2 inches, wing 3·75, tail 2·9, tarsus 0·95; expanse 11·6; bill from front 0·52, from gape 0·75; length of foot 1·63. Iris dark hazel-brown; bill blackish, pale below, yellowish at base; feet brownish black.

No. 1267. Kashghar, January 24, 1874.

No. 1335. Kashghar, February 11, 1874.

No. 1343. Kashghar, February 12, 1874.

Colonel Biddulph says that this Pipit was very common about water all through the winter in the plains of Turkestan.

"This species," Dr. Scully says, "was common in Kashgharia in winter. I shot several of these birds near Beshkant, in the beginning of February, where they were running among the rushes in frozen marshy ground. In the spring the birds frequented moist meadow-ground and the vicinity of running water, feeding on insects and small worms. I procured one specimen at Yarkand on the 7th April in full summer plumage. The Turki name for the bird is 'Boz sunduk,' 'the Ashy Wagtail.'"

Family CERTHIIDÆ.

Genus **CERTHIA.**

121. Certhia himalayana.

Certhia himalayana, Vig.; Bidd. Ibis, 1881, p. 50; Scully, t. c. p. 431; Oates, Faun. Brit. Ind., Birds, i. p. 329 (1889).

No. 64. Murree, June 30, 1873.
Nos. 85, 86. Changligally, Murree, July 3, 1873.
No. 307. Sonámarg, August 10, 1873.
No. 384. Baltal, August 12, 1873.

According to Dr. Stoliczka's 'Diary' this species was not common near Sonámarg.

122. Certhia hodgsoni.

Certhia familiaris, L.; Hume & Henders. Lahore to Yark. p. 180 (1873); Homeyer & Tancré, MT. orn. Ver. Wien, 1883, p. 83.
Certhia hodgsoni, Brooks; Oates, Faun. Brit. Ind., Birds, i. p. 329 (1889).

Met with by Dr. Henderson in Kashmir.

Genus **TICHODROMA.**

123. Tichodroma muraria.

Tichodroma muraria (L.); Hume & Henders. Lahore to Yark. p. 181 (1873); Dresser, Ibis, 1876, p. 176; Blanf. East. Persia, ii. p. 223 (1876); Scully, Str. F. iv. p. 136 (1876); Prjev. in Rowley's Orn. Misc. ii. p. 166 (1877); Bidd. Ibis, 1881, p. 30; Scully, ibid. p. 431; C. Swinh. Ibis, 1882, p. 103; Severtz. Ibis, 1883, p. 71; Zarudn. Ois. Transcasp. p. 47 (1885); Menzbier, Ibis, 1875, p. 357; Oates, Faun. Brit. Ind., Birds, i. p. 334 (1889); Sharpe, Trans. Linn. Soc. (2) Zool. v. p. 77 (1889).
Tichodroma phœnicoptera, Severtz. Turkest. Jevotn. p. 66 (1873).

No. 766. Lukung, September 20, 1873.
No. 905. Sanju, October 28, 1873.
No. 920. Sanju, October 29, 1873.
No. 925. Sanju, October 29, 1873.

All the above specimens are in full winter plumage; those killed in October being of a purer grey, the September specimen rather browner.

No. 1107. Yangihissár, December 2, 1873.

Dr. Stoliczka mentions that this species remains during the winter near Yangihissár, and he found it breeding in the Duba Valley in June.

Dr. Henderson states that this species was seen almost daily from near Birnbur right through Kashmir and Ladák to beyond Leh; but it never occurred after leaving the Pangong Lake. On the return journey the bird had commenced finding its way down to those portions of the plains which lie near the foot of the hills, and on the day of his return he killed a specimen at Lahore.

Dr. Scully writes:—"This species was not noticed in the plains, and was first met with in the hills in September. At Tadlik, below the Kirghiz encampment at Kichik Yailak, I saw two of these birds, one of which I shot. They flew from the bank of the stream to the hillside, up which they ran pretty nimbly."

Colonel Biddulph has sent us the accompanying note:—"I first saw this near the Fotala; there were a good many near Tanksi on the rocks overhanging the river, and they were very common throughout the plains, on rocks and even on low walls alongside of the roads and houses. I did not, however, see the species at Marálbáshi, and I never noticed it out of the plains; but it was still about these when we returned in May."

Family SITTIDÆ.

Genus **SITTA.**

124. Sitta kashmirensis.

Sitta cashmirensis, Brooks, J. A. S. Beng. xli. part 2, p. 75.
Sitta kashmirensis, Brooks; Oates, Faun. Brit. Ind., Birds, i. p. 303 (1889).

No. 299. Sonámarg, August 10, 1873.—Length 5·25 inches, wing 3·2, tail 1·62, tarsus 0·75; expanse 9·5; bill from front 0·6, from gape 0·82; length of foot 1·05. Iris very dark brown; bill blackish, horny above; feet bluish leaden.

Nos. 304, 305. Sonámarg, August 10, 1873.

No. 349. Sonámarg, August 12, 1873.

No. 372. Baltal, August 12, 1873.

125. Sitta leucopsis.

Sitta leucopsis, Gould; Hume & Henders. Lahore to Yark. p. 181 (1873); Bidd. Ibis, 1881, p. 50; Scully, t. c. p. 431; Oates, Faun. Brit. Ind., Birds, i. p. 306 (1889).

No. 82. Murree, July 2, 1873.

According to Dr. Henderson this Nuthatch was only met with by him in the Upper Sind Valley, Kashmir. Here it was not uncommon, but it so persistently affected the tops of the loftiest trees that very few specimens were obtained.

Family PARIDÆ.

Genus **PARUS.**

126. Parus atriceps.

Parus bokharensis, Severtz. Turkest. Jevotn. p. 66 (1873); Dresser, Ibis, 1876, p. 92.
Parus cinereus, V.; Hume & Henders. Lahore to Yark. p. 230 (1873); Wardlaw Ramsay, Ibis, 1880, p. 62; C. Swinh. Ibis, 1882, p. 110; Sharpe, Trans. Linn. Soc. (2) Zool. v. part 3, p. 76 (1889).
Parus nipalensis, Hodgs.; Bidd. Ibis, 1881, p. 73; Scully, t. e. p. 568; Barnes, Str. F. ix. p. 217 (1880).
Parus atriceps, Horsf.; Oates, Faun. Brit. Ind., Birds, i. p. 46 (1889).

No. 37, ♂ ad. Murree, June 25, 1873.
No. 115, ad. Murree, July 13, 1873.
No. 232, imm. Srinagar, July 31, 1873.
No. 468, adult. Tashkyum, August 20, 1873.—Bill horny black; feet bluish; iris blackish. Length 6·0 inches, wing 2·9, tail 2·5, tarsus 0·75.
No. 474, imm. Shargol, August 20, 1873.

Common in Kashmir according to Dr. Henderson, who obtained several specimens in the Sind Valley both in June and October.

127. Parus cyanus.

Parus cyanus, Pall.; Hume & Henders. Lahore to Yark. p. 232 (1873); Severtz. Turkest. Jevotn. p. 66 (1873); Dresser, Ibis, 1876, p. 93; Seully, Str. F. iv. p. 154 (1876).

No. 583. South of Sanju Pass, Karakash Valley, October 22, 1873.—Length 5·2 inches, wing 2·75, tail 2·45. Bill horny blackish; feet pale bluish.
No. 574. Tám, October 25, 1873.—"Kok-talké" (Kokan).
No. 957. Bora, November 4, 1873.
No. 1043. Yarkand, November 23, 1873.
No. 1150. Kashghar, December 15, 1873.
Nos. 1858, 1859. Duba, June 6, 1874.
No. 1659. Pasrobat, May 13, 1874.

In his 'Diary' Dr. Stoliczka says that *P. cyanus* was evidently breeding near Pasrobat, and of two females shot near Duba, "one had well-developed eggs, but had not begun laying; the other had small eggs." On the 5th of June, writing from the camp about two miles west of Mazar Khoja, he says that the species was breeding in the Duba Valley.

Dr. Henderson writes:—"This beautiful little species was common in August in the tamarisk-jungles on the banks of the Arpalák, within fifteen miles of the plains of Yarkand. It had apparently been recently breeding, as all the specimens obtained were young birds, one of them being scarcely fully fledged." Dr. Scully also observes:—"This pretty little species was met with in small flocks among the tamarisk-bushes which grow on the banks of the Arpalák and Sanju streams. It had evidently been breeding in those places."

Colonel Biddulph sends us the following note:—"We met this first in November between Sanju and Yarkand in small scrub jungle, and everywhere in similar localities throughout the winter all over the plains of Turkestan. They were especially common at

Marálbáshi. We again saw them on our way up to the Pámir, but not, so far as I remember, in Wakhán. We did not see them about the plains of Turkestan in summer; but then we found them higher up, as in the Kulustan valley."

128. Parus monticola.

Parus monticolus, Vig.; Hume & Henders. Lahore to Yark. p. 229 (1873).
Parus monticola, Oates, Faun. Brit. Ind., Birds, i. p. 49 (1889).

Nos. 34, 36, adults. Murree, June 25, 1873.

Common in Kashmir, according to Dr. Henderson.

Genus **LOPHOPHANES.**

129. Lophophanes melanolophus.

Parus melanolophus, Vig.; Bidd. Ibis, 1881, p. 72; Scully, t. c. p. 568.
Lophophanes melanolophus, Wardlaw Ramsay, Ibis, 1880, p. 61; Oates, Faun. Brit. Ind., Birds, i. p. 57 (1889).

No. 328. Sonámarg, August 11, 1873.

No. 351. Sonámarg, August 12, 1873.—Length 4·4 inches, wing 2·55, tail 1·75, tarsus 0·65; expanse 7·5; bill from front 0·32, from gape 0·45; length of foot 1·1. Iris dark brown; bill black; feet bluish.

Nos. 356, 364. Sonámarg, August 12, 1873.

No. 386. Baltal, August 12, 1873.

130. Lophophanes rufinuchalis.

Parus rufonuchalis, Blyth; Bidd. Ibis, 1881, p. 72; Scully, t. c. p. 568.
Lophophanes rufonuchalis, Hume & Henders. Lahore to Yark. p. 229 (1873); Wardlaw Ramsay, Ibis, 1880, p. 62; Bidd. Ibis, 1882, p. 281; Oates, Faun. Brit. Ind., Birds, i. p. 58 (1889).

No. 326, imm. Sonámarg, August 11, 1873.

No. 350, adult. Sonámarg, August 12, 1873.—Length 5·45 inches, wing 2·86, tail 2·1, tarsus 0·75; expanse 9; bill from front 0·45, from gape 0·55; length of foot 1·3. Iris brown; bill black; feet bluish.

No. 361. Sonámarg, August 12, 1873.

No. 376. Baltal, August 12, 1873.

Genus **SYLVIIPARUS.**

131. Sylviiparus modestus.

Sylviparus modestus, Burt.; Oates, Faun. Brit. Ind., Birds, i. p. 53 (1889).

No. 500, ♀. About Kharbu, 12,000 feet, August 22, 1873.—Length 4 inches, wing 2·3, tail 1·3, tarsus 0·55; expanse 7·25; bill from front 0·32, from gape 0·4. Iris dark brown; bill bluish horny; feet bluish.

No. 547. Leh, August 27, 1873.
No. 564. Leh, August 28, 1873.

Dr. Stoliczka says that this species was very common near Leh in August. Here Colonel Biddulph also found great numbers of old and young birds in September. He says:—"We used to see them picking at those excrescences so common on willow-leaves."

Genus ÆGITHALISCUS.

132. Ægithaliscus erythrocephalus.

Ægithaliscus erythrocephalus (Vig.); Oates, Faun. Brit. Ind., Birds, i. p. 50 (1889).

No. 39. Murree, June 25, 1873.

Genus ÆGITHALUS.

133. Ægithalus coronatus. (Plate VII.)

Ægithalus coronatus, Severtz. Turkest. Jevotn. p. 136, pl. 9. fig. 3 (1873); Dresser, Ibis, 1876, p. 175; Sharpe, Trans. Linn. Soc. (2) Zool. v. p. 76 (1889).
Ægithalus stoliczkæ, Hume, Str. F. ii. p. 521 (1874).

No. 941, ♂ ad. Bora, November 4, 1873.—Bill bluish horny; feet bluish; iris blackish brown. Length 4 inches, wing 2, tail 1·7, tarsus 0·6.
Nos. 1219, 1233, adults. Marálbáshi, January 1874.

These specimens were identified by Dr. Severtzoff himself as belonging to his species, *Æ. coronatus*.

Colonel Biddulph writes:—"One or two specimens were shot somewhere near Kashghar by Dr. Stoliczka. In the jungles about Marálbáshi they were common. They were in parties of a dozen, threading their way in and out of the bushes."

Genus LEPTOPŒCILE.

134. Leptopœcile sophiæ. (Plate VIII.)

Leptopœcile sophiæ, Severtz. Turkest. Jevotn. pp. 66, 135, pl. viii. figs. 8, 9 (1873); Dresser, Ibis, 1876, p. 171; Scully, Str. F. iv. p. 153 (1876); Prjev. in Rowley's Orn. Misc. ii. p. 191 (1877); Bidd. Ibis, 1881, p. 37; Scully, ibid. p. 567; Bidd. Ibis, 1882, p. 280; Oates, Faun. Brit. Ind., Birds, i. p. 246 (1889).
Stoliczkana stoliczkæ, Hume, Str. F. ii. p. 513 (1874).

Nos. 814, 817, 821. Sháhidúla, October 19, 1873.
No. 858, ♂. Gidjik, October 24, 1873.—Bill black; feet horny blackish brown; iris bright red. Length 4·6 inches, wing 2·1, tail 2·15, tarsus 0·72.
No. 859, ♀ ad. Gidjik, October 24, 1873.
Nos. 871, 872, 873. Tám, October 25, 1873.
Nos. 1408, 1410, ♂. Akdarra (Aktala), March 22, 1874.

Colonel Biddulph sends us the following note:—"We met with this species on our way to Yarkand, in the Karakash Valley, at elevations of from 11,000 to 14,000 feet. There are

lots of low thorny bushes in this valley, and in these we found the birds in pairs. They were pretty numerous, but very difficult to shoot, as on our approach they concealed themselves. I heard no song. A few days later we found them immediately below the Sanju Pass, on the northern side, in similar jungle at about 11,000 feet. We also saw this species, I am sure, on our way up to the Pamir in similar localities at about the same elevations. A young bird was certainly procured at Leh in June, but with this exception we saw none elsewhere on our way back."

"This pretty little species," writes Dr. Scully, "was met with in Kashgharia in August along the banks of the Karakash River, at Pilataghach, Toghrasu, Oibuk, Sháhidúla, Balakchi, and Gulgun Shah, at elevations of from 10,800 to 13,000 feet. The birds were numerous and continually hopping about or flitting from place to place in the tamarisk, buckthorn, and *Hololachne* bushes growing on the banks of the river; they uttered a pretty loud, sweet chirping cry. I do not know which was most difficult, to see these birds, to shoot them, or to find them when shot, in the dense bushes which they frequent."

Genus **PANURUS.**

135. Panurus biarmicus.

Calamophilus biarmicus (L.); Scully, Str. F. iv. p. 154 (1876); Homeyer & Tancré, MT. orn. Ver. Wien, 1883, p. 85.
Panurus barbatus, Severtz. Turkest. Jevotn. p. 66 (1873).
Panurus biarmicus, Dresser, Ibis, 1876, p. 94; Prjev. in Rowley's Orn. Misc. ii. p. 191 (1877).
Calamophilus barbatus, Radde, Ornis, iii. p. 476 (1887).

No. 935, ♂. Oi-tográk, November 4, 1873.—Length 6·8 inches, wing 2·45, tail 3·4; expanse 7·5. Iris golden; bill reddish yellow; feet black.

No. 936, ♀. Oi-tográk, November 4, 1873.—Length 6·85 inches, wing 2·5, tail 3·5, tarsus 0·9; expanse 7·07. Iris yellow; bill dusky yellow; feet black; wings reach within 2·75 inches of end of tail.

Nos. 937, 939. Oi-tográk, November 4, 1873.

Nos. 1002, 1003. Yarkand, November 11, 1873.

No. 1015. Yarkand, November 13, 1873. "Kúckacé" (Yarkand); "Cácheé" (Kokan).

Nos. 1016, 1022, 1023. Yarkand, November 13, 1873.

Nos. 1036, 1037, 1038, 1040, 1041. Yarkand, November 22, 1873.

All young birds of the last season, No. 1040 having still some black streaks on the back.

Nos. 1081, 1087. Yarkand, November 28, 1873.

No. 1235. Marálbáshi, January 1874.

Nos. 1713, 1716. Yarkand, May 22, 1874.

Dr. Stoliczka states in his 'Diary' that he shot the first specimen of this bird, which he did not know, just as he was leaving Oi-tográk, in the high reed-grass, where it was feeding on the seeds of the latter. He got it again in November near Yarkand in swampy ground. It is rather interesting, in view of the affinities set forward for the Reedling by Blyth and others, that Dr. Stoliczka, in the later pages of his diary, refers to it as the "new *Emberiza*!"

"*Calamophilus biarmicus*," writes Colonel Biddulph, "we first got between Sanju and Kárghalik at Oi-tográk in November, in high reed-grass, in bush-jungle, near water,

perching on the reeds; again in the swamps round Yarkand, and again in similar localities about Marálbáshi it was very common, in flocks of from 30 to 40. This was in winter. I do not remember seeing them anywhere in summer, and certainly never on the Pamir or in Wakhán."

Dr. Scully says:—"The Bearded Reedling was exceedingly common in the plains of Eastern Turkestan, among the reeds and rushes growing in marshy ground and on the borders of lakes. I did not observe it in winter, but it was said to be a permanent resident in the country. These birds take short wavering flights, in small flocks usually, and as they fly make a curious sound, which is sought to be imitated by the Turki name given to the species, 'Jingjing.' Near Yarkand this bird breeds in April and May."

Family MELIPHAGIDÆ.

Genus **ZOSTEROPS.**

136. Zosterops palpebrosa.

Zosterops palpebrosa (T.); Oates, Faun. Brit. Ind., Birds, i. p. 214 (1889).

No. 103. Murree, July 7, 1873.
No. 127. Tinali, Jhelum Valley, July 18, 1873.
No. 143. Chackoti, July 22, 1873.
No. 279. Gond, August 8, 1873.

Colonel Biddulph procured specimens at Baramula in August, and says that the species was very common in the Jhelum Valley in Kashmir.

Family REGULIDÆ.

Genus **REGULUS.**

137. Regulus regulus.

Motacilla regulus, Linn. Syst. Nat. i. p. 338 (1766).
Regulus cristatus, Koch; Severtz. Turkest. Jevotn. p. 66 (1873); Dresser, Ibis, 1876, p. 92; Bidd. Ibis, 1881, p. 67; Scully, t. c. p. 450; Bidd. Ibis, 1882, p. 279; Homeyer & Taneré, MT. orn. Ver. Wien, 1883, p. 84; Oates, Faun. Brit. Ind., Birds, i. p. 344 (1889).
Regulus himalayensis, Blyth; Prjev. in Rowley's Orn. Misc. ii. p. 173 (1877).

No. 919, ad. Sanju, November 1, 1873.—Bill black; feet horny black. Length 4·15 inches, wing 2·1, tail 1·7, tarsus 0·75.
No. 942, ♂ ad. Bora, November 4, 1873.—Bill black; feet horny brown. Length 4·2 inches, wing 2·2, tail 1·6.
No. 945, ad. Bora, November 4, 1873.
Nos. 1117, 1121, ad. Yangihissár, December 2, 1873.
Nos. 1134, 1144, ad. Kashghar, December 11–14, 1873.

Also seen by Colonel Biddulph at Leh in September.

Family LANIIDÆ.

Genus **LANIUS.**

138. Lanius homeyeri.

Lanius homeyeri, Cab.; Severtz. Str. F. iii. p. 430 (1875); Scully, Str. F. iv. p. 136 (1876); Bidd. Ibis, 1881, p. 51; Scully, ibid. p. 432; Homeyer & Tancré, MT. orn. Ver. Wien, 1883, p. 87; Menzbier, Ibis, 1885, p. 357; Oates, Faun. Brit. Ind., Birds, i. p. 462 (1889).

Lanius leucopterus, Severtz. Turkest. Jevotn. p. 67 (1863); Dresser, Ibis, 1876, p. 184.

No. 1097. Yangihissár, November 30, 1873.—Length 10·5 inches, wing 4·7, tail 4·6, tarsus 1·2; expanse 15; bill from front 0·7, from gape 1·17; length of foot 1·8. Iris hazel-brown; bill bluish horny above, pale at base and sides, pale fleshy below, with dusky tip; feet horny black; wings reach within 3 inches of end of tail.

No. 1337. Kashghar, February 11, 1874.

No. 1376. Jigda, February 25, 1874.

"This Shrike," Dr. Scully writes, "was tolerably common near Kashghar and Yarkand in winter; it was never seen in spring or summer, as it had then migrated northwards. It chiefly affects bare places with a few trees scattered about, but is occasionally seen near villages. Near Kizil in January I saw some of these Shrikes perched on small leafless trees, sitting very motionless and apparently not alarmed when one approached them even pretty closely. This Shrike was occasionally trained to capture small birds, such as Sparrows, &c. . . . It is the winter Shrike of Kashgharia, as *Lanius arenarius* is the summer one. The Turki name for the species is 'Ala ghurulai,' the Variegated Shrike."

139. Lanius erythronotus.

Lanius erythronotus (Vig.); Hume & Henders. Lahore to Yark. p. 182 (1873); Bidd. Ibis, 1881, p. 51; Scully, t. c. p. 433; Oates, Faun. Brit. Ind., Birds, i. p. 464 (1889).

No. 27. Murree, June 24, 1873.

Nos. 138, juv., 140, ad. Hatti, Jhelum Valley, July 21, 1873.

No. 156, juv. Baramula, July 25, 1873.

No. 198. Srinagar, July 29, 1873.

No. 267. Srinagar, August 5, 1873 (Témbh).

Colonel Biddulph says that he saw this species only in Kashmir and Ladák, south of the Indus; more were seen in the Indus Valley.

140. Lanius isabellinus.

Lanius isabellinus, Ehr.; Severtz. Turkest. Jevotn. pp. 67, 144 (1873); Dresser, Ibis, 1876, p. 185; Blanf. East. Persia, ii. p. 139 (1876); Scully, Ibis, 1881, p. 433; C. Swinh. Ibis, 1882, p. 104; Severtz. Ibis, 1883, p. 70; Menzbier, Ibis, 1885, p. 357; Sharpe, Trans. Linn. Soc. (2) Zool. v. p. 76 (1889).

Lanius arenarius, Blyth; Hume & Henders. Lahore to Yark. p. 183, pl. iii. (1873); Scully, Str. F. iv. p. 137 (1876); Prjev. in Rowley's Orn. Misc. ii. p. 274 (1877); Scully, Ibis, 1881, p. 433.

Lanius cristatus (nec L.); Hume & Henders. Lahore to Yark. p. 182 (1873); Bidd. Ibis, 1881, p. 51.

Otomela isabellina, Zarudn. Ois. Transcasp. p. 35 (1885).

No. 999, ad. Yarkand, November 12, 1873.—Length 7·5 inches, wing 3·57, tail 3·2, tarsus 0·95; expanse 11·2; bill from front 0·45, from gape 0·8; length of foot 1·55. Iris brown; bill dusky brown above, pale at base of lower mandible; feet brownish black.

No. 1692, ad. East of Ighiz Yar, May 19, 1874.—Got four eggs on a pear-tree 10 feet above ground.

No. 1693, ad. Kizil, May 19, 1874.—Got two eggs on a tree about 15 feet above ground.

Nos. 1739, 1745, ad. Yarkand, May 15–20, 1874.

No. 1839, ad. Kugiár, June 1, 1874.

In his 'Diary' Dr. Stoliczka has the following notes:—"Kizil, May 19. Near a small house and a few fields about ten miles east of Ighiz Yar I got the nest of this *Lanius* (shooting the female) on a pear-tree, between branches about ten feet above the ground. The nest is round, made of twigs outside, with some grass and cotton and old rags interwoven together. There were four eggs in the nest, the young being nearly fully developed. At Kizil I got another nest high up on a tree, with two fresh eggs." On the 31st of May, 1874, he states that he saw full-fledged young near Beshterek.

Colonel Biddulph sends us a note:—"I shot the first specimen, a solitary one, at Marál-báshi in July. It was peculiarly common everywhere in the plains when we returned in May." It is evidently this species, as Dr. Scully suspects, which was procured by Dr. Henderson and called *L. cristatus*. Dr. Scully writes:—"The Desert Shrike is very common in the plains of Kashgharia, where it breeds. I obtained my first specimen of this species near Yarkand on the 14th April, and from that date it was observed continuously up to the 15th of August, when I saw the last of this Shrike north of the Chuchu Pass, at an elevation of about 10,000 feet. It was not observed at all during the winter, and with the exception of possibly a few stray stragglers, the bird no doubt migrates from Eastern Turkestan about October, and this agrees exactly with the native account of the matter. The bird breeds in May and June." Dr. Scully gives a full account of the eggs.

Family AMPELIDÆ.

Genus **AMPELIS.**

141. Ampelis garrulus.

Ampelis garrulus, L.; Dresser, Ibis, 1876, p. 188; Scully, Str. F. iv. p. 152 (1876); Prjev. in Rowley's Orn. Misc. ii. p. 272 (1877); Homeyer & Tancré, MT. orn. Ver. Wien, 1883, p. 88; Sharpe, Cat. B. Brit. Mus. x. p. 212 (1885).

Bombycilla garrula (L.); Severtz. Turkest. Jevotn. p. 67 (1873).

This species was only procured by Dr. Scully, who writes:—"This bird was purchased for Mr. Shaw in the bazaar of Yarkand, where it was being carried about perched on a man's finger. It appeared to be very quiet in confinement, and was never heard to utter any sound. It soon died, however, and before we left Yarkand Mr. Shaw gave me the skin, as I had not been able to procure a specimen. When alive the bird had a beautiful appearance: its dense glossy feathers gave it rather the look of a perfect wax model than a living bird. I heard from several sources that this species was common in the hills near Aksu, and I also heard of its occurrence in Sarikol; the bird is never seen in the plains of Eastern

Turkestan, unless it be in captivity. The Yarkandis have an absurd legend about this bird being the grandsire of the common Hoopoe! A Yarkandi bird-catcher told me that its name was 'Tagh hüpüpi,' the 'Mountain Hoopoe;' but this designation was no doubt evolved out of his inner consciousness."

Family SYLVIIDÆ.

Genus **ACROCEPHALUS.**

142. Acrocephalus turdoides.

Acrocephalus turdoides (Meyer); Seebohm, Cat. B. Brit. Mus. v. p. 95 (1881); Homeyer & Taneré, MT. orn. Ver. Wien, 1883, p. 84; Sharpe, Trans. Linn. Soc. (2) Zool. v. p. 71 (1889).
Acrocephalus arundinaceus, L.; Scully, Str. F. iv. p. 146 (1876); Blanf. East. Persia, ii. p. 195 (1876).

I have examined the specimen procured by Dr. Scully at Yarkand on the 23rd of June, and there is no question of its being the true *A. turdoides*. The Yarkandi shikaris gave him the following information about this Reed-Warbler:—"The Turki name for the bird is 'Kanaichi.' It is a seasonal visitant, arriving about March, and leaving at the beginning of winter, when the water begins to freeze. It breeds in Yarkand, making its nest in the *yekan* (reeds), where it lives, and laying four eggs about the beginning of June. It does not migrate to Hindustan, but westwards to Mazendaran (an extensive forest-region in Persia near the borders of the Caspian)." Eggs were brought to Dr. Scully, who says that the species was often heard in reeds and marshy ground near Yarkand, but he could only procure one specimen.

143. Acrocephalus stentorius.

Acrocephalus stentorius (H. & E.); Blanf. East. Persia, ii. p. 194 (1876); Seebohm, Cat. B. Brit. Mus. v. p. 98 (1881); C. Swinh. Ibis, 1882, p. 108; Zarudn. Ois. Transeasp. p. 42 (1885); Scully, J. A. S. Beng. lvi. p. 81 (1887); Oates, Faun. Brit. Ind., Birds, i. p. 356 (1889).
Acrocephalus brunnescens (Jerd.); Hume & Henders. Lahore to Yark. p. 214, pl. xvi. (1873).

Nos. 200, 202, 206, 216, 220, 223, 227. Srinagar, July 29–31, 1873.

No. 217. Srinagar, August 3, 1873.—Length 7·35 inches, wing 3·38, tail 2·75, tarsus 1·1; expanse 10; bill from front 0·75, from gape 1·1; length of foot 1·4. Iris brown, with lighter round the pupil; bill blackish horny, pale below; feet bluish horny.

Very common in Kashmir, according to Dr. Henderson, breeding in that country. Dr. Stoliczka mentions that he found young birds near Srinagar in July.

144. Acrocephalus agricola.

Acrocephalus agricola, Jerd.; Seebohm, Cat. B. Brit. Mus. v. p. 105 (1881); Severtz. Ibis, 1883, p. 65; Zarudn. Ois. Transeasp. p. 42 (1885); Oates, Faun. Brit. Ind., Birds, i. p. 359 (1889).
Salicaria capistrata, Severtz. Turkest. Jevotn. pp. 66, 127 (1873); id. Str. F. iii. p. 425 (1875); Dresser, Ibis, 1876, p. 84.
Salicaria modesta, Severtz. Turkest. Jevotn. p. 66.
Salicaria gracilis, Severtz. t. c. p. 66.

No. 204. Srinagar, July 29, 1873.
No. 235. Srinagar, August 1, 1873.
Nos. 1715, 1717. Yarkand, May 22, 1874.
No. 1782. Yarkand, May 24, 1874.

Colonel Biddulph says that he only procured this species in the Sind Valley.

Genus **TRIBURA.**

145. Tribura major. (Plate IX.)

Lusciniola major (Brooks) ; Seebohm, Cat. B. Brit. Mus. v. p. 124 (1881).
Acrocephalus macrorhynchus (Hume) ; Scully, Str. F. iv. p. 146 (1876).
Dumeticola major, Brooks ; Biddulph, Ibis, 1881, p. 65 ; Scully, t. c. p. 448.
Tribura major, Oates, Faun. Brit. Ind., Birds, ii. p. 362 (1889).

No. 300. Sonámarg, August 10, 1873.—Length 5·65 inches, wing 2·3, tail 2·35, tarsus 0·85 ; expanse 7·15 ; bill from front 0·38, from gape 0·8. Iris brown ; bill horny, yellow below ; feet light brown, tarsi yellowish fleshy.

No. 352. Sonámarg, August 12, 1873.—Length 6·2 inches, wing 2·38, tail 2·5, tarsus 0·8 ; expanse 7·2 ; length of foot 1·3. Iris brown ; bill horny, yellow below ; feet pale, with slight fleshy tinge.

Nos. 375, 383. Baltal, August 12, 1873.

Nos. 432, 435, ad. et juv. Tashgam, Dras Valley, August 17, 1873.

No. 490. Kharbu, Ladák, August 21, 1873.—Length 6·25 inches, wing 2·3, tail 2·4, tarsus 0·9 ; bill from front 0·55, from gape 0·75. Iris pale brown ; bill horny black, lower mandible paler, yellow at the angles of the mouth. Note "*tick, tick, tick* :" lives in fields on grass. Native name "Chibi marta."

No. 493. Kharbu, August 21, 1873.

No. 550. Leh, August 27, 1873.

Nos. 1845, 1850. Kugiár, June 2, 1874.

According to Dr. Stoliczka's 'Diary' this species was not common near Sonámarg in August, but more plentiful apparently near Baltal, though "very difficult to get."

Colonel Biddulph states that he found this Warbler very common in Ladák, especially about Leh, both coming and going. It frequented the cornfields, at elevations of from 10,000 to 11,000 feet, and was not found near water. It occurred singly, and not in flocks.

The specimen procured by Dr. Scully was only doubtfully referred to his *Acrocephalus macrorhynchus* by Mr. Hume, who was not able at the time to compare it with the type. Mr. Seebohm (Cat. B. v. p. 403) thought it must be *Hypolais rama*, but Mr. Oates has identified it with *T. major* (*cf.* Faun. Brit. Ind., Birds, i. p. 361). Dr. Scully writes :—"I found this bird between Kizil Aghil and Tám, at elevations of from 7000 to 9000 feet, in August. The bird occurred in long grass (called *chigh*) near the Arpalák and Sanju streams ; it seemed to be very restless, continually flitting from blade to blade, and only one specimen was obtained. In Turki it is called 'Chighchi,' in allusion to the grass which it frequents."

Genus **LUSCINIOLA.**

146. Lusciniola melanopogon.

Lusciniola melanopogon (Temm.); Seebohm, Cat. B. Brit. Mus. v. p. 132 (1881); C. Swinh. Ibis, 1882, p. 108; Oates, Faun. Brit. Ind., Birds, i. p. 369 (1889).
Calamodus melanopogon, Blanf. East. Persia, ii. p. 198 (1876).

No. 1020. Yarkand, December 13, 1873.—Length 6·0 inches, wing 2·6, tail 2·3, tarsus 0·9; expanse 7·6; bill from front 0·4, from gape 0·68; length of foot 1·3. Iris brown; bill horny black; feet black; wings reach within 1·5 inch of end of tail.

Genus **HYPOLAIS.**

147. Hypolais rama.

Hypolais rama (Sykes); Blanf. East. Persia, ii. p. 187 (1876); Seebohm, Cat. B. Brit. Mus. v. p. 84 (1881); C. Swinh. Ibis, 1882, p. 108; Scully, J. A. S. Beng. lvi. p. 81 (1887); Oates, Faun. Brit. Ind., Birds, i. p. 391 (1889).
Phyllopneuste rama (Sykes); Scully, Str. F. iv. p. 147 (1876).

No. 1702. Yarkand, May 21, 1874.
Nos. 1789, 1791. Yarkand, May 25, 1874. "Got the nest and eggs."
No. 1793. Yarkand, May 26, 1874.
Nos. 1816, 1820, 1821. Kárghalik, May 30, 1874.

On the 27th of May, Dr. Stoliczka wrote in his 'Diary':—"I got two nests of *Hypolais rama*, which is beginning to breed. The nest is made entirely of fine grass, coarser outside, very fine inside, and interwoven with seed-film. It is thick, and about two inches deep, round, with a diameter of 2·0 to 2·2 inches. One nest had five, the other three eggs, all fresh, and the birds were evidently still laying. The eggs are rather roundish, creamy white, with some pale inky spots, and with dark streaks and blotches, more or less confluent, round the thick end. The nests were in gardens, in low vine-bushes, about two feet above the ground. Other birds I saw about high calamus grass, and they must breed there too." Colonel Biddulph shot specimens at Kárghalik on the 30th of May, and at Ighiz Yar on the 19th of May.

Dr. Scully observes:—"*H. rama* is a seasonal visitant to the plains of Kashgharia, where it breeds. I got the first specimen of it in May, and it was never observed in winter. The Turki name for this Warbler is 'Koktalghu.'"

Genus **SYLVIA.**

148. Sylvia nisoria.

Sylvia nisoria (Bechst.); Severtz. Turkest. Jevotn. p. 65 (1873); Dresser, Ibis, 1876, p. 79; Blanf. East. Persia, ii. p. 174 (1876); Seebohm, Cat. B. Brit. Mus. v. p. 6 (1881); Homeyer & Tancré, MT. orn. Ver. Wien, 1883, p. 84; Severtz. Ibis, 1883, p. 67; Sharpe, Trans. Linn. Soc. (2) Zool. v. pt. 3, p. 70 (1889).
Nisoria undata (Brehm); Scully, Str. F. iv. p. 149 (1876).

No. 1697. Kizil, May 19, 1874.
Nos. 1735, 1736, 1741, 1743, 1788, 1790, 1795. Yarkand, May 15th to 26th, 1874.
Nos. 1815, 1818, 1823, 1826. Kárghalik, May 30, 1874.

No. 1777. Yarkand, May 23, 1874.—Length 7 inches, wing 3·4, tail 2·8, tarsus 1·05; expanse 10·7; bill from front 0·5, from gape 0·77. Iris sulphur-yellow; bill dark horny above and at tip of lower mandible, pale fleshy at base; wings reach within 1·7 inch of end of tail. "Bulbul" (*Turki*). A beautiful songster, of which I got two nests and saw several others in gardens. Begins to lay about the middle of May.

Under the date of the 24th of May, when the expedition was at Yarkand, Dr. Stoliczka's 'Diary' has the following note:—"Got the nest of the Bulbul: it is very plentiful in the gardens. In one I got three nests with from four to five eggs; in one nest they had nearly fully-developed young; in others the eggs were almost fresh. The nest is on a tree or bush at from four to seven feet above the ground; it is a regular *Sylvia's* nest, round, regularly cup-shaped, made outside of coarse grass and thin dry twigs, inside of thin grass interwoven with horse-hair. It is $1\frac{3}{4}$ inch deep, and $2\frac{3}{4}$ inches in inner diameter, perfectly round. Eggs dirty greenish with dull greenish spots, and rounded, with more confluent dull dark blotches round the thicker end.

Dr. Scully gives a good account of the nesting of this species, which, he says, "arrives about the neighbourhood of Yarkand in May, and probably migrates about September; it is never seen in the country during the winter. It has a beautiful and melodious song, and is hence called by the Yarkandis 'Bulbul.'"

Colonel Biddulph writes:—"This was not a winter bird, but on our return from the Pámir we found it about Yarkand in May, where it had already commenced to breed. It was very common about Kárghalik. It is a beautiful songster. It is tame, and comes about habitations. It is a bush- and tree-haunting bird, but it is never seen on the ground."

149. Sylvia cinerea.

Sylvia cinerea (Bechst.); Severtz. Turkest. Jevotn. p. 65 (1873); Seebohm, Cat. B. Brit. Mus. v. p. 8 (1881); Bidd. Ibis, 1881, p. 67; Homeyer & Tancré, MT. orn. Ver. Wien, 1883, p. 84; Oates, Faun. Brit. Ind., Birds, i. p. 395 (1889).

Sylvia rufa, Bodd.; Dresser, Ibis, 1876, p. 79; Scully, Str. F. 1881, p. 450.

No. 748. Lukung, September 19, 1873.

A young bird fresh moulted into winter plumage.

150. Sylvia nana.

Sylvia nana (H. & E.); Blanf. East. Persia, ii. p. 178 (1876); Dresser, Ibis, 1876, p. 80; Seebohm, Cat. B. Brit. Mus. v. p. 26 (1881); Sharpe, Trans. Linn. Soc. (2) Zool. v. pt. 3, p. 71 (1889); Oates, Faun. Brit. Ind., Birds, i. p. 396 (1889).

Atraphornis aralensis (Eversm.); Severtz. Turkest. Jevotn. pp. 65, 124 (1873); Zarudn. Ois. Transcasp. p. 43 (1885); Menzbier, Ibis, 1885, p. 354.

Sylvia aralensis, Prjev. in Rowley's Orn. Misc. ii. p. 170 (1877).

No. 828. Sháhidúla, October 20, 1873.—Length 5 inches. Iris golden yellow; bill brownish, pale underneath; feet pale yellow with a faint greenish tinge.

151. Sylvia affinis.

Sylvia affinis, Blyth; Wardlaw Ramsay, Ibis, 1880, p. 59; Bidd. Ibis, 1881, p. 67; Scully, t. c. p. 450; Seebohm, Cat. B. Brit. Mus. v. p. 19 (1881); Zarudn. Ois. Transcasp. p. 41 (1885); Scully, J. A. S. Beng. lvi. p. 80 (1887); Oates, Faun. Brit. Ind., Birds, i. p. 397 (1889).

Sylvia curruca (nec Linn.) ; Severtz. Turkest. Jevotn. p. 65 (1873) ; Hume & Henders. Lahore to Yark. p. 221 (1873) ; Blanf. East. Persia, ii. p. 175 (1876) ; Prjev. in Rowley's Orn. Misc. ii. p. 170 (1877).

No. 80. Indus Valley, south of Chimray, September 13, 1873.—Length 5·65 inches, wing 2·6, tail 2·45, tarsus 0·78; bill from front 0·3, from gape 0·58. Iris light brown; bill horny black; feet horny blackish.

No. 146, imm. Urumbu, Jhelum Valley, July 24, 1873.

No. 273, juv. Kangan, August 7, 1873.

No. 295. Gaganghir, August 9, 1873.

Nos. 459, 465. Kargil, August 19, 1873.

No. 476. Shargol, August 20, 1873.

Nos. 562, 576. Leh, August 28, 1873.

No. 669, juv. Leh, September 10, 1873.

As mentioned below, Dr. Henderson's specimen from Khushtágh belongs to this species, and therefore the one shot by Dr. Scully at the same place on the 8th of August may also have been an example of this Warbler.

152. Sylvia minuscula.

Sylvia curruca (nec Gm.) ; Scully, Str. F. iv. p. 150 (1876).

Sylvia minuscula, Hume; Seebohm, Cat. B. Brit. Mus. v. p. 20, pl. 1 (1881) ; C. Swinh. Ibis, 1882, p. 109; Severtz. Ibis, 1883, p. 67; Scully, J. A. S. Beng. lvi. p. 80 (1887); Oates, Faun. Brit. Ind., Birds, i. p. 398 (1889) ; Sharpe, Trans. Linn. Soc. (2) Zool. v. pt. 3, p. 71 (1889).

No. 969. Kárghalik, November 6, 1873.

No. 1094. Yangihissár, December 1, 1873.

Nos. 1680, 1682. Ighiz Yar, May 18, 1874.

No. 1814. Kárghalik, May 30, 1874.

Nos. 1840, 1843. Kugiár, June 1, 1874.

Nos. 1848–49. Kugiár, June 2, 1874.

The specimens killed in winter differ little from those obtained in summer, but have rather more brown on the head, which is scarcely different in colour from the back.

Dr. Stoliczka's 'Diary' contains a note that this Warbler was common near Yangihissár in December, and on the 18th of May he found a nest in a rose-bush near Ighiz Yar. On the 31st of May he writes:—"*Beshterek*. This Warbler is very common and breeding. One nest had one, and another three fresh eggs: one had two half-incubated eggs. The nest is in a small bush about ten inches or a foot above the ground, composed entirely of grass, regularly cup-shaped, round, about $1\frac{1}{4}$ inch deep and $1\frac{3}{4}$ in diameter. Outside it consists of moderately coarse grass; inside of finer grass with a little grass-seed film interwoven."

An examination of the specimen procured by Dr. Scully at Posgám in October, and identified by him as *Sylvia curruca*, proves that it is really *S. minuscula*. Whether the other specimens from Khushtágh and Sughuchaw were also of this species I cannot say. Dr. Henderson's specimens in the Hume Collection are also mixed up, one from Oi-tográk being *S. minuscula*, and another from Khushtágh being *S. affinis*.

Dr. Scully states that this Whitethroat arrives in the plains of Kashgharia about April, and migrates southwards towards the end of October. It breeds in May and June.

Genus **PHYLLOSCOPUS.**

153. Phylloscopus affinis.

Phylloscopus affinis (Tick.); Seebohm, Cat. B. Brit. Mus. v. p. 65 (1881); Bidd. Ibis, 1881, p. 66; Scully, t. c. p. 449; Oates, Faun. Brit. Ind., Birds, i. p. 401 (1889).

No. 408. Mataian, August 15, 1873.—Length 4·5 inches, wing 2·35, tail 1·7, tarsus 0·8; expanse 6·8; bill from front 0·33, from gape 0·53. Iris brown; bill horny above, yellow below; feet greenish horny brown.

No. 555. Leh, August 28, 1873.

No. 723. Tanksi, September 17, 1873.

No. 753. Lukung, September 19, 1873.

No. 780. Chagra, 14,000 feet, September 21, 1873.

154. Phylloscopus tytleri. (Plate X.)

Phylloscopus tytleri, Brooks; Seebohm, Cat. B. Brit. Mus. v. p. 66 (1881); Bidd. Ibis, 1881, p. 66; Oates, Faun. Brit. Ind., Birds, i. p. 402 (1889).

Nos. 309, 330. Sonámarg, August 10, 11, 1873 (*Colonel Biddulph*).

Nos. 381, 385. Baltal, August 12, 1873.

No. 471. Shargol, August 20, 1873.—Bill horny blackish, angle of mouth yellow; feet horny blackish, soles yellow. Length 4·85 inches, wing 2·3, tail 2·0, tarsus 0·72.

155. Phylloscopus tristis.

Phylloscopus tristis, Blyth; Hume & Henders. Lahore to Yark. p. 219 (1873); Blanf. East. Persia, ii. p. 180 (1876); Scully, Str. F. iv. p. 148 (1876); Dresser, Ibis, 1876, p. 82; Wardlaw Ramsay, Ibis, 1880, p. 59; Seebohm, Cat. B. Brit. Mus. v. p. 63 (1881); Bidd. Ibis, 1881, p. 65; Scully, ibid. p. 448; C. Swinhoe, Ibis, 1882, p. 108; Sharpe, Trans. Linn. Soc. (2) Zool. v. pt. 3, p. 71 (1889); Oates, Faun. Brit. Ind., Birds, i. p. 403 (1889).

Phyllopneuste tristis, Homeyer & Tancré, MT. orn. Ver. Wien, 1883, p. 84.

Ficedula fulvescens, Severtz. Turkest. Jevotn. pp. 65, 126 (1873).

No. 330. Sonámarg, August 11, 1873.

No. 385. Baltal, August 12, 1873.

No. 433. Tashgam, August 17, 1873.

No. 452. Chiliscambo, August 18, 1873.

Nos. 455, 456. Kargil, August 19, 1873.

Nos. 470, 471. Shargol, August 20, 1873.—Length 4·65–4·85 inches, wing 2·15–2·3, tail 1·9–2, tarsus 0·7–0·72. Bill and feet horny blackish; soles and angle of mouth yellow.

Nos. 497, 503, 507. Kharbu, August 21, 22, 1873.

Nos. 545, 546, 549. Leh, August 27, 1873.

Nos. 553, 554, 557, 558, 568, 569, 570. Leh, August 28, 1873.

Nos. 574, 575. Leh, August 29, 1873.

No. 642. Leh, September 6, 1873.

No. 1116. Yangihissár, December 2, 1873.

No. 1405. Ighiz Yar, March 21, 1874.

No. 1655. Pasrobat, May 13, 1874.

Dr. Henderson procured numerous specimens of this species, including a nestling, in Ladák in July. Dr. Scully says that it was very common in August along the Sanju stream and in the Karakásh Valley at elevations of from 9000 to 14,000 feet. Colonel Biddulph also collected a number of specimens near Kargil and Leh.

156. Phylloscopus indicus.

Phylloscopus indicus (Jerd.); Wardlaw Ramsay, Ibis, 1880, p. 59; Bidd. Ibis, 1881, p. 66; Scully, t. c. p. 449; Oates, Faun. Brit. Ind., Birds, i. p. 404 (1889).
Ficedula obscura, Severtz. Turkest. Jevotn. pp. 65, 124 (1873).
Lusciniola indica, Seebohm, Cat. B. Brit. Mus. v. p. 126 (1881).
Phyllopneuste indica, Homeyer & Tancré, MT. orn. Ver. Wien, 1883, p. 84.

Nos. 391, 420. Mataian, August 14, 15, 1873.
No. 451. Chiliscambo, August 18, 1873.
No. 504. Kharbu, August 22, 1873.
Nos. 611, 615, 627, 637, 643. Leh, September 4–6, 1873.
Nos. 1654, 1657. Pasrobat, May 13, 1874.
No. 1665. Chehil Gumbar, May 14, 1874.
No. 1862. Duba, June 6, 1874.

The young bird is more rufous than the adult, and the yellow is much more vivid below. A young bird in autumn plumage was procured on the 19th of September.

Dr. Stoliczka states that this species was not common near Pasrobat on the 13th of May, and from Chehil Gumbar he writes :—"*P. indicus* prefers feeding about rocks instead of in bushes, as Jerdon observes. It has a peculiar short shrill call." Again, from Duba he observes :—"The call of *P. indicus*, which is common all along, is a deep whistling 'chip-chip,' three or four times repeated. At first the call resembles that of a Kestrel, and is almost as loud."

Colonel Biddulph writes :—"We got a specimen at Leh in September; we then found it common in the valleys of Kizilyart Mountains, at elevations of from 9000–10,000 feet, in May, on our return from the Pámir. We got it again at Ak-Musjid (5000 feet) in June."

157. Phylloscopus fuscatus.

Phylloscopus fuscatus (Blyth); Oates, Faun. Brit. Ind., Birds, i. p. 405 (1889).
Phyllopneuste fuscata, Prjev. in Rowley's Orn. Misc. ii. p. 171 (1877).
Lusciniola fuscata, Seebohm, Cat. B. Brit. Mus. v. p. 127 (1881).

No. 816. Sháhidúla, October 19, 1873.
No. 830. Nubra Valley, October 1873 (*Dr. Bellew*).

158. Phylloscopus humii.

Reguloides viridipennis (nec Blyth); Scully, Str. F. iv. p. 149 (1876).
Phylloscopus humii (Brooks); Seebohm, Cat. B. Brit. Mus. v. p. 67, pl. iv. fig. 1 (1881); Oates, Faun. Brit. Ind., Birds, i. p. 410 (1889).
Reguloides humii, Bidd. Ibis, 1881, p. 66; Scully, ibid. p. 449.

No. 308. Sonámarg, August 10, 1873.
No. 320. Sonámarg, August 11, 1873.—Bill horny above, yellowish below; feet greenish horny, soles yellow. Length 4·6 inches, wing 2·1, tail 1·6, tarsus 0·75.

No. 379. Baltal, August 12, 1873.
No. 678, ♀. S. of Chimray, Indus Valley, September 13, 1873.—Bill horny brown above, dusky yellow below; feet pale horny; iris brown. Length 4·9 inches, wing 2·3, tail 1·8, tarsus 0·75.
No. 684. S. of Chimray, September 13, 1873.
No. 944. Bora, November 4, 1873.
Nos. 1517, 1520. Panjah, April 14–23, 1874.
No. 1580. Langarkish, April 26, 1874.
No. 1595. Sarikol, May 7, 1874.
Nos. 1684, 1689. S.W. of Ighiz Yar, May 18, 1874.
Nos. 1857, 1860. Duba, June 6, 1874.

The specimen which Dr. Scully procured between Tám and Tadlik on the 17th of August is in very bad condition and has the head shot away. He identified it as *Reguloides viridipennis*, but I think there can be no doubt of its being *P. humii*. On the strength of this specimen Mr. Oates has recorded the species as occurring in Turkestan (Faun. Brit. Ind., Birds, i. p. 419).

159. Phylloscopus proregulus.

Phylloscopus proregulus (Pall.); Seebohm, Cat. B. Brit. Mus. v. p. 71 (1881); Oates, Faun. Brit. Ind., Birds, i. p. 408 (1889).
Reguloides proregulus, Hume & Henders. Lahore to Yark. p. 220 (1873); Prjev. in Rowley's Orn. Misc. ii. p. 172 (1877).

No. 334. Sonámarg, August 11, 1873.
No. 355. Sonámarg, August 12, 1873.—Length 4 inches, wing 2·2, tail 1·6, tarsus 1·65. Iris brown; bill horny brown; feet very pale horny, soles yellowish.

Dr. Henderson obtained a single specimen in the Sind Valley in Kashmir on the 30th of October. Colonel Biddulph shot one at Sonámarg on the 15th of July.

160. Phylloscopus superciliosus.

Phylloscopus superciliosus (Gm.); Seebohm, Cat. B. Brit. Mus. v. p. 68 (1881); Oates, Faun. Brit. Ind., Birds, i. p. 409 (1889).
Reguloides superciliosus, Prjev. in Rowley's Orn. Misc. ii. p. 172 (1877).
Phyllopneuste superciliosa, Homeyer & Tancré, MT. orn. Ver. Wien, 1883, p. 84.

No. 285. Gaganghir, August 9, 1873.
No. 310. Sonámarg, August 10, 1873.
No. 322. Sonámarg, August 11, 1873.—Length 4·5 inches, wing 2·3, tail 1·7, tarsus 0·70; expanse 7, bill from front 0·25, from gape 0·47. Iris brown; bill horny brown; feet greenish, tarsi dark greenish horny, soles greenish white.
No. 382. Baltal, August 12, 1873.
No. 529. Snurla, August 24, 1873.
No. 724. Tanksi, September 17, 1873.
No. 820. Sháhidúla, October 19, 1873.
No. 860. Gidjik, October 24, 1873.

Colonel Biddulph states that he procured this species at Panjah in Wakhán in April, at Aktala in May, and at Duba on the 6th of June.

Dr. Stoliczka found the species very common in the Duba Valley on the 6th of June, but it was then only pairing, and he supposed it would not lay before the end of June.

Genus **ACANTHOPNEUSTE.**

161. Acanthopneuste viridana.

Acanthopneuste viridanus (Blyth) ; Oates, Faun. Brit. Ind., Birds, i. p. 414 (1889).
Phylloscopus viridanus, Hume & Henders. Lahore to Yark. p. 220, pl. xix. (1873) ; Scully, Str. F. iv. p. 148 (1876) ; Wardlaw Ramsay, Ibis, 1880, p. 59 ; Seebohm, Cat. B. Brit. Mus. v. p. 44 (1881) ; Bidd. Ibis, 1881, p. 66 ; Scully, ibid. p. 448 ; Severtz. Ibis, 1883, p. 67.
Phyllopneuste viridana, Homeyer & Tancré, MT. orn. Ver. Wien, 1883, p. 84.

No. 362. Sonámarg, August 8, 1873.
No. 380. Baltal, August 12, 1878.
No. 457. Kargil, August 19, 1873.
No. 628. Leh, September 4, 1873.
No. 861. Gidjik, N. of Sanju Pass, October 24, 1873.

This speeies, according to Dr. Henderson, was common in Hill Yarkand, at the Arpalik River, in August. Dr. Scully says that he observed it among the tamarisk and willow bushes fringing the Sanju stream, and along the banks of the Karakash River.

162. Acanthopneuste occipitalis.

Acanthopneuste occipitalis (Jerd.) ; Oates, Faun. Brit. Ind., Birds, i. p. 418 (1889).
Phylloscopus occipitalis, Seebohm, Cat. B. Brit. Mus. v. p. 50 (1881).
Reguloides occipitalis, Biddulph, Ibis, 1881, p. 66 ; Scully, t. c. p. 449.

No. 35. Murree, June 25, 1873.
Nos. 48, 49. Murree, June 26, 1873.
No. 87. Changligally, July 3, 1873.
No. 281, ♀. Gond, August 8, 1873.—Length 4·8 inches, wing 2·6, tail 1·9, tarsus 0·35 ; bill from front 0·35, from gape 0·56. Iris dark brown ; bill brown, yellow on lower mandible ; feet leaden grey.
Nos. 290, 297. Gaganghir, August 9, 1873.
No. 311. Sonámarg, August 10, 1873.
No. 363. Sonámarg, August 12, 1873.
No. 387. Baltal, August 12, 1873.

Colonel Biddulph notes this species from Sonámarg in July, and in the Jhelum Valley in August.

Genus **CRYPTOLOPHA.**

163. Cryptolopha xanthoschista.

Abrornis xanthoschistus (Hodgs.) ; Hume & Henders. Lahore to Yark. p. 220, pl. 20. fig. 1 (1873).
Cryptolopha xanthoschista, Sharpe, Cat. B. Brit. Mus. iv. p. 398 (1879, pt.) ; Oates, Faun. Brit. Ind., Birds, i. p. 425 (1889).

Found by Dr. Henderson to be very common in Kashmir in May and October. Colonel Biddulph obtained a specimen at Baramula in July.

Genus **HORORNIS.**

164. Horornis pallidus.

Horornis pallidus (Brooks) ; Oates, Faun. Brit. Ind., Birds, i. p. 436 (1889).
Cettia fortipes (Hodgs.) ; Seebohm, Cat. B. Brit. Mus. v. p. 136 (1881, pt.).

No. 155. Urumbu, July 24, 1873 (*Colonel Biddulph*).
Nos. 288, 294, 296. Gaganghir, August 9, 1873.

In his 'Diary,' Dr. Stoliczka notes that he found this species plentiful at Gond, but difficult to procure; he shot several specimens at Gaganghir; he says that it "sits near the tops of trees in the morning." He adds:—"No *H. pallidus* is seen from a little above Gaganghir. Its whistle is very peculiar and loud for the size of the bird."

Genus **CETTIA.**

165. Cettia orientalis. (Plate XI.)

Cettia orientalis, Tristr. Ibis, 1867, p. 79.
Cettia albiventris, Severtz. Turkest. Jevotn. pp. 66, 131 (1873).
Cettia scalenura, Severtz. Turkest. Jevotn. pp. 66, 131 (1873).
Bradyptetes cetti (nec Marm.) ; Blanf. East. Persia, ii. p. 200 (1876).
Cettia cetti (nec Marm.) ; Seebohm, Cat. B. Brit. Mus. v. p. 135 (1881) ; C. Swinh. Ibis, 1882, p. 108 ; Scully, J. A. S. Beng. lvi. p. 81 (1887).
Cettia orientalis, Tristr. ; Oates, Faun. Brit. Ind., Birds, i. p. 441 (1889).

No. 998. Yarkand, November 11, 1873.—Length 6·3 inches, wing 2·75, tail 2·8, tarsus 0·9 ; expanse 8·15 ; bill from front 0·44, from gape 0·66. Iris brown ; bill horny brown, lower mandible fleshy brown ; feet whitish fleshy.
No. 1088. Yarkand, November 28, 1873.

Mr. Seebohm has united this species to the *Cettia cetti* of Europe, but it is undoubtedly a paler race, though probably only subspecifically separable. I follow Mr. Oates in keeping it distinct from the true *C. cetti*.

Genus **SUYA.**

166. Suya crinigera.

Suya crinigera, Hodgs. ; Sharpe, Cat. B. Brit. Mus. vii. p. 177 (1883) ; Oates, Faun. Brit. Ind., Birds, i. p. 444 (1889).

Colonel Biddulph obtained this species at Dhunna, three marches east of Murree, on the 5th of August, and again at Chikar on the 7th of the same month.

Genus **RHOPOPHILUS.**

167. Rhopophilus albosuperciliaris.

Suya albosuperciliaris, Hume ; Hume & Henders. Lahore to Yark. p. 218, pl. xviii. (1873) ; Scully, Str. F. iv. p. 147 (1876).

No. 940, ♂. Sanju, November 1, 1873.—Length 8 inches, wing 2·7, tail 4·2, tarsus 1·1; expanse 8·3; bill from front 0·5, from gape 0·73. Iris brown; bill horny brown, lower mandible pale; feet fleshy grey.

No. 947. Sanju, November 1, 1873.

Nos. 940, 958. Oi-tográk, November 4, 1873.

Nos. 1243, 1244, 1253. Marálbáshi, January 1874.

No. 1368. Aioksogon, February 19, 1874.

In all these specimens the white supercilium and the black moustache are, the former almost wholly, the latter to a great extent, obsolete. The whole colouring is more sandy than in the type, and the marking of the surface wanting. Colonel Biddulph's note is as follows:—"This species I only saw at Sanju at one place, but between Sanju and Kárghalik and again at Marálbáshi it was very common. In all these localities it was found amongst long grass."

Dr. Stoliczka in his 'Diary' remarks that on leaving Oi-tográk on the 4th of November he obtained several *Suya albosuperciliaris*; they were, as usual, very difficult to shoot. At Aioksogon, on the 19th of February, this species was common among the high grass. Colonel Biddulph procured specimens at Sanju on the 1st of November, and several at Marálbáshi in January.

Dr. Henderson writes:—"A single specimen of this remarkable bird was obtained on the 10th of September on the Yarkand plains at Khushtágh, an oasis in the desert, where a few fields of peas, barley, and wheat fringe for a breadth of a few hundred yards a small stream that further on loses itself in the desert. For a distance of from twelve to twenty miles in either direction an absolute desert of shifting sand and gravel stretches away to the horizon. Numerous small birds frequented these isolated fields, where the Common Swallow, too, was particularly numerous, but of the species now under consideration only a single individual, a female, was procured."

"This species," writes Dr. Scully, "is tolerably common in the plains of Eastern Turkestan, where it is said to be a permanent resident. It has a sweet plaintive note, and frequents long grass and bushes growing near rivers and streams. It breeds in May and June: some young birds were obtained about the middle of the latter month. The Turki name for the species is 'Suram.'"

Family TURDIDÆ.

Subfamily *SAXICOLINÆ*.

Genus **PRATINCOLA.**

168. Pratincola caprata.

Pratincola caprata (L.); C. Swinh. Ibis, 1882, p. 106; Sharpe, Cat. B. Brit. Mus. iv. p. 195 (1879, pt.); id. Trans. Linn. Soc. (2) Zool. v. p. 70 (1889); Oates, Faun. Brit. Ind., Birds, ii. p. 59 (1890).

No. 141, ♀ ad. Hatti, July 21, 1873.

169. Pratincola maura.

Pratincola rubicola (nec Linn.); Hume & Henders. Lahore to Yark. p. 204 (1873).

Pratincola indica, Blyth; Prjev. in Rowley's Orn. Misc. ii. p. 185 (1877); Bidd. Ibis, 1881, p. 54;

Homeyer & Tancré, MT. orn. Ver. Wien, 1883, p. 85; Severtz. Ibis, 1883, p. 70; Zarudn. Ois. Transcasp. p. 39 (1885).

Pratincola maura (Pall.); Sharpe, Cat. B. Brit. Mus. iv. p. 188 (1879); Wardlaw Ramsay, Ibis, 1880, p. 55; Oates, Faun. Brit. Ind., Birds, ii. p. 61 (1890).

Nos. 44, 47, ♂ ♀ ad. Murree, June 26, 1873.
No. 75, ♂ ad. Murree, July 2, 1873.
Nos. 98–101, ♂ ♀ ad. et juv. Changligally, July 6, 1873.
No. 201, juv. Srinagar, July 29, 1873.
Nos. 272, 274, ♂ ad. Kangan, August 7, 1873.
No. 280, juv. Gond, August 8, 1873.
No. 377, ♂ ad. Sonámarg, August 12, 1873.
Nos. 1492, 1494, ♂ ♀ ad. Panjah, April 14–23, 1873.
No. 1675, ♂ ad. Ighiz Yar, May 18, 1874.

Colonel Biddulph procured a pair at Panjah on the 21st of April. On the 17th, Dr. Stoliczka in his 'Diary' states that he saw a pair at the above-mentioned place on the 17th of April, which were the first he observed travelling up. On the 18th he saw another. At Ighiz Yar this species was very common on the 18th of May, and he found it breeding in the Duba Valley on the 6th of June. Dr. Henderson says that it was found throughout Kashmir and in Yarkand, on the banks of the Karakásh River, and wherever there was grass and low jungle, but not otherwise.

Genus **SAXICOLA.**

170. Saxicola picata.

Saxicola picata, Blyth; Blanf. East. Persia, ii. p. 153 (1876); Wardlaw Ramsay, Ibis, 1880, p. 57; Barnes, Str. F. ix. p. p. 217 (1880); Scebohm, Cat. B. Brit. Mus. v. p. 367 (1881); Bidd. Ibis, 1881, p. 56; Scully, t. c. p. 441; Bidd. Ibis, 1882, p. 276; C. Swinh. t. c. p. 106; Zarudn. Ois. Transcasp. p. 38 (1885); Sharpe, Trans. Linn. Soc. (2) Zool. v. p. 74 (1889); Oates, Faun. Brit. Ind., Birds, ii. p. 71 (1890).

No. 458. Kargil, August 19, 1873.

171. Saxicola pleschanka.

Saxicola leucomela (Pall.); Severtz. Turkest. Jevotn. p. 65 (1873).

Saxicola hendersoni, Hume, Ibis, 1871, p. 408; id. & Henders. Lahore to Yark. p. 206, pl. 13 (1873); Scully, Str. F. iv. p. 144 (1876); Bidd. Ibis, 1881, p. 61.

Saxicola morio, H. & E.; Dresser, Ibis, 1875, p. 336; Blanf. East. Persia, ii. p. 152 (1876); Prjev. in Rowley's Orn. Misc. ii. p. 183 (1877); Wardlaw Ramsay, Ibis, 1880, p. 57; Seebohm, Cat. B. Brit. Mus. v. p. 372 (1881); Bidd. Ibis, 1881, p. 58; Scully, t. c. p. 443; Bidd. Ibis, 1882, p. 276; C. Swinh. t. c. p. 107; Homeyer & Tancré, MT. orn. Ver. Wien, 1883, p. 85; Severtz. Ibis, 1883, p. 69; Scully, J. A. S. Beng. lvi. p. 82 (1887); Sharpe, Trans. Linn. Soc. (2) Zool. v. p. 74 (1889).

Saxicola pleschanka (Lepesch.); Oates, Faun. Brit. Ind., Birds, ii. p. 73 (1890).

No. 462. Kargil, August 19, 1873.
No. 475 [juv.]. Shargol, August 20, 1873.
Nos. 1673, 1679, 1686, 1690 [♂ ad.]. South-west of Ighiz Yar, May 18, 1874.

No. 1679 still bears abundant traces of the brown tips to the dorsal feathers,

which are characteristic of winter plumage. On this specimen Dr. Severtzow has written:—"*Saxicola talas*, Sev. = ? *S. morio*, 2nd nest, 1st year," meaning that its backward plumage is due to its having been a late-bred bird of the previous year.

Dr. Stoliczka says in his 'Diary' that this Chat was very common at Ighiz Yar on the 18th of May. Colonel Biddulph procured a male at Kila Panj on the 12th of April, 1874, and he noticed the species in the Karakásh Valley. Dr. Henderson found it on the Arpalák River near Sanju, and at Khushtágh, twenty miles further north. Dr. Scully writes:—"This species was found in September in the plains of Kashgharia, at an elevation of about 6100 feet. It was met with on the desert oases of Sulikaziz Langar and Khushtágh, running about in suitable fields, where it was tolerably numerous. The Yarkandis, who know the bird well, say that it breeds in the country, and disappears entirely in the winter. The Turki name is 'Kara Chiket,' 'Black Wheatear.'"

172. Saxicola œnanthe.

Saxicola œnanthe (L.); Severtz. Turkest. Jevotn. p. 65 (1873); Dresser, Ibis, 1875, p. 333; Blanf. East. Persia, ii. p. 146 (1876); Prjev. in Rowley's Orn. Misc. ii. p. 183 (1877); Bidd. Ibis, 1881, p. 60; Scully, t. c. p. 444; Seebohm, Cat. B. Brit. Mus. v. p. 391 (1881); Homeyer & Tancré, MT. orn. Ver. Wien, 1883, p. 85; Zarudn. Ois. Transcasp. p. 37 (1885); Sharpe, Trans. Linn. Soc. (2) Zool. v. p. 75 (1889).

Nos. 1455, 1456 [♂ ♀]. Pámir Kul, April 5, 1874.
No. 1475 [♂]. Panjah, April 16, 1874.—Length 6·5 inches, wing 3·82, tail 2·2, tarsus 1·15. Iris brown; bill and feet black.
Nos. 1487 [♀], 1488, 1489 [♂ ♀]. Panjah, April 14–23, 1874.
No. 1496 [♀]. Panjah, April 14–23, 1874.
Nos. 1506, 1512 [♂], 1549 [♀]. Panjah, April 14–23, 1874.
No. 1742, ♂ pull. Yarkand, May 15, 1874.
No. 1784 [♀]. Yarkand, May 28, 1874.

Dr. Stoliczka found the Wheatear very common at Ighiz Yar on the 18th of May, and it was breeding in the Duba Valley early in June.

173. Saxicola isabellina.

Saxicola squalida, Eversm.; Severtz. Turkest. Jevotn. p. 65 (1873).
Saxicola saltator, Ménétr.; Severtz. t. c. p. 65.
Saxicola isabellina, Cretzschm.; Dresser, Ibis, 1875, p. 335; Blanf. East. Persia, ii. p. 147 (1876); Scully, Str. F. iv. p. 142 (1876); Prjev. in Rowley's Orn. Misc. ii. p. 184 (1877); Seebohm, Cat. B. Brit. Mus. v. p. 399 (1881); Bidd. Ibis, 1881, p. 60; Scully, ibid. p. 444; C. Swinh. Ibis, 1882, p. 107; Severtz. Ibis, 1883, p. 68; Homeyer & Tancré, MT. orn. Ver. Wien, 1883, p. 85; Zarudn. Ois. Transcasp. p. 38 (1885); Scully, J. A. S. Beng. lvi. p. 82 (1887); Oates, Faun. Brit. Ind., Birds, ii. p. 77 (1890).

No. 1510. Panjah, April 14–23, 1874.
No. 1587. Sirikul Lake, May 1, 1874.

Colonel Biddulph procured specimens at Kizil on the 19th of May, and at Posgám on the 29th of the same month. It was only seen in summer in the plains of Turkestan.

Dr. Scully writes:—"This species was common in the plains of Eastern Turkestan, at elevations of from 4000 to 6300 feet, from the middle of April to the middle of August; it was never met with during the winter, nor in the hills at any season. It probably arrives in the country towards the end of March, and leaves certainly not later than October. The bird

frequents waste ground, usually on the borders of cultivation, and at Besharik and Bora in August it was found associated with *Saxicola deserti*. In the neighbourhood of Yarkand it breeds in April and May; three quite young birds were obtained there during the latter month. The Turki name for all Wheatears is *Chikit*, a word having some reference to the black-and-white tail; the present species is distinguished as *Boz chikit*, *i. e.* 'the Grey Wheatear.'"

174. Saxicola deserti.

Saxicola atrogularis, Blyth; Hume & Henders. Lahore to Yark. p. 205 (1873).
Saxicola deserti, T.; Dresser, Ibis, 1875, p. 337; Scully, Str. F. iv. p. 143 (1876); Blanf. East. Persia, ii. p. 148 (1876); Wardlaw Ramsay, Ibis, 1880, p. 57; Seebohm, Cat. B. Brit. Mus. v. p. 383 (1881); C. Swinh. Ibis, 1882, p. 107; Severtz. Ibis, 1883, p. 69; Homeyer & Tancré, MT. orn. Ver. Wien, 1883, p. 85; Scully, J. A. S. Beng. lvi. p. 82 (1877); Sharpe, Trans. Linn. Soc. (2) Zool. v. p. 74 (1889); Oates, Faun. Brit. Ind., Birds, ii. p. 78 (1890).
Saxicola solina, Eversm.; Severtz. Turkest. Jevotn. p. 65 (1873); id. Str. F. iii. p. 429 (1875).

No. 811. North of Suget Pass, October 16, 1873.

"The Black-throated Wheatear," writes Dr. Henderson, "was common in Ladák, from Kharbu to Leh, and, indeed, almost to the Pangong Lake, and again in the Lower Karakásh Valley and the plains of Yarkand. A nestling was obtained on the 5th of August at Balakchi, on the Karakásh, showing that the bird breeds in this neighbourhood."

Dr. Scully states that "this species was common in the plains of Kashgharia at elevations of 4500 feet and upwards, and in some portions of the hills up to an elevation of 12,300 feet. It was never observed during the winter. In the plains it was found in the desert ground between Sanju and Kárghalik, hopping among the little sand-banks, and it was common between Sháhidúla and Gulgun Shah in the Karakásh Valley. It probably breeds in the localities mentioned during the months of June and July. The Turki name for this species is "Ala Chikit," the "Variegated Wheatear."

Dr. Stoliczka says that it breeds in the Duba Valley.

175. Saxicola montana.

Saxicola deserti, pt. (nec Cretzschm.); Blanf. East. Persia, ii. p. 148 (1876).
Saxicola montana, Gould; Seebohm, Cat. B. Brit. Mus. v. p. 384 (1881); Zarudn. Ois. Transcasp. p. 38 (1885); St. John, Ibis, 1889, p. 164; Oates, Faun. Brit. Ind., Birds, ii. p. 78 (1890).

Nos. 498, 511 [♂ ♀ moulting]. Kharbu, August 21, 1873.
No. 541 [♂ moulting]. Snimu, August 26, 1873.
No. 549 [♂ moulting]. Leh, August 27, 1873.
No. 688 [♂]. Zingral, South of Chang-la, 15,000 feet, September 14, 1873.—Total length 6·65 inches, wing 4·0, tail 2·9, tarsus 1·0. Iris blackish brown; bill and feet black.
No. 693 [♂]. Tsúltak, north of Chang-la, 15,500 feet, September 15, 1873.
Nos. 1490, 1505, 1522 [♂ ad.]. Panjah, April 14, 1874.
No. 1476 [♂]. Panjah, April 16, 1874.—Length 6·85 inches, wing 4·0, tail 2·7, tarsus 1·04. Iris dark brown; bill and feet black.
No. 1681 [♀]. South-west of Ighiz Yar, May 18, 1874.
No. 1819 [♀]. Kárghalik, May 30, 1874.
No. 1842 [♂]. Kugiár, June 1, 1874.

Dr. Stoliczka remarks that this species (which he at first mistook for *S. deserti*) had young in August when he was at Kharbu. At Tsúltak he says it was "very common, and evidently

migrating down." At Ak Masjid it was breeding, but he could not get the eggs. Colonel Biddulph says that it was met with everywhere in spring, summer, and autumn beyond the Zoji-la, but was not seen during the winter in the plains of Turkestan.

176. Saxicola chrysopygia.

Saxicola chrysopygia (De Fil.); Blanf. East. Persia, ii. p. 151, pl. 10. fig. 1 (1876); Seebohm, Cat. B. Brit. Mus. v. p. 389 (1881); Oates, Faun. Brit. Ind., Birds, ii. p. 79 (1890).
Saxicola kingi, Hume, Ibis, 1871, p. 29.

No. 1458. Panjah, April 13, 1874.—Bill black; feet black; iris brown. Total length 7·0 inches, wing 3·82, tail 2·6, tarsus 1·06.
No. 1500. Panjah, April 14–23, 1874.

Subfamily *RUTICILLINÆ*.

Genus **HENICURUS**.

177. Henicurus maculatus.

Henicurus maculatus (Vig.); Hume & Henders. Lahore to Yark. p. 222 (1873); Sharpe, Cat. B. Brit. Mus. vii. p. 317 (1883); Oates, Faun. Brit. Ind., Birds, ii. p. 83 (1890).

No. 60, juv. Murree, June 29, 1873.

Dr. Henderson met with this species at Púnch on the road down from Kashmir to Lahore.

Genus **CHÆMORRHORNIS**.

178. Chæmorrhornis leucocephala.

Chæmorrhornis leucocephala (Vig.); Hume & Henders. Lahore to Yark. p. 214 (1873); Prjev. in Rowley's Orn. Misc. ii. p. 178 (1877).
Chimarrhornis leucocephala, Sharpe, Cat. B. Brit. Mus. vii. p. 47 (1883); Oates, Faun. Brit. Ind., Birds, ii. p. 89 (1890).

No. 312, juv. Sonámarg, August 10, 1873.
No. 342, adult. Sonámarg, August 11, 1873.

Procured by Dr. Henderson in the neighbourhood of Púnch. Colonel Biddulph informs us that it was very common in the Sind Valley in July and in Ladák between Kargil and the Zoji-la.

Genus **RUTICILLA**.

179. Ruticilla frontalis.

Ruticilla frontalis (Vig.); Hume & Henders. Lahore to Yark. p. 211 (1873); Bidd. Ibis, 1881, p. 63; Scully, t. c. p. 446; Seebohm, Cat. B. Brit. Mus. v. p. 349 (1881); Oates, Faun. Brit. Ind., Birds, ii. p. 91 (1890).

Dr. Henderson found this species very common in Kashmir, but only on the return journey.

180. Ruticilla erythronota.

Ruticilla erythronota (Eversm.); Severtz. Turkest. Jevotn. p. 65 (1873); Dresser, Ibis, 1876, p. 77; Blanf. East. Persia, ii. p. 167 (1876); Bidd. Ibis, 1881, p. 62; Scully, t. e. p. 445; Seebohm,

Cat. B. Brit. Mus. v. p. 348 (1881) ; C. Swinh. Ibis, 1882, p. 107 ; Homeyer & Tancré, MT. orn. Ver. Wien, 1883, p. 85 ; Scully, J. A. S. Beng. lvi. p. 82 (1890) ; Oates, Faun. Brit. Ind., Birds, ii. p. 84 (1890).

No. 849, ♂. North of Sháhidúla, October 21, 1873.
No. 886, ♂. Sanju, October 27, 1873.
No. 918, ♀. Sanju, November 1, 1873.—Length 6·6 inches, wing 3·3, tail 2·7, tarsus 0·93. Iris brown; bill and feet black.
Nos. 1102, 1110, 1113, 1114, ♂. Yangihissar, December 1, 2, 1873.
Nos. 1232, 1251, ♂. Marálbáshi, January 1874.
Nos. 1290, 1298, 1346, ad. Kashghar, February 2–12, 1874.
No. 1377, ♂. Jigda, February 26, 1874.
No. 1425. Tarbashi, March 27, 1874.
No. 1452. Kanshubar, April 2, 1874.

Colonel Biddulph writes :—"I saw this species first in the Karakásh Valley below Sháhidúla; again in small numbers all over the plains of Turkestan during the winter. I also shot one going up to Sarikol, but I do not remember ever seeing it in Wakhán or in Yarkand during the summer."

181. Ruticilla rufiventris.

Ruticilla erythroprocta (nec Gould) ; Severtz. Turkest. Jevotn. p. 65 (1873) ; Hume & Henders. Lahore to Yark. p. 208 (1873).
Ruticilla semirufa (nec Ehr.) ; Dresser, Ibis, 1876, p. 77.
Ruticilla rufiventris, V. ; Blanf. East. Persia, ii. p. 163 (1876) ; Scully, Str. F. iv. p. 144 (1876) ; Wardlaw Ramsay, Ibis, 1880, p. 57 ; Bidd. Ibis, 1881, p. 61 ; Scully, t. c. p. 445 ; Seebohm, Cat. B. Brit. Mus. v. p. 342 (1881) ; C. Swinh. Ibis, 1882, p. 107 ; Severtz. Ibis, 1883, p. 68 ; Zarudn. Ois. Transcasp. p. 37 (1885) ; Scully, J. A. S. Beng. lvi. p. 82 (1887) ; Sharpe, Trans. Linn. Soc. (2) Zool. v. p. 73 (1889) ; Oates, Faun. Brit. Ind., Birds, ii. p. 95 (1890).

Nos. 396, 398, ♂ juv. Mataian, August 14, 1873.
No. 411, ♂ ad. Mataian, August 15, 1873.—Length 6·0 inches, wing 3·5, tail 2·35, tarsus 0·95 ; bill from front 0·45, from gape 0·7. Iris brown ; bill black ; feet horny black.
Nos. 417, 418, ♀ juv. Mataian, August 15, 1873.
No. 422, ♂. Drás, August 16, 1873.
No. 528, juv. Snurla, August 24, 1873.
No. 533, ♂ ad. Saspúl, on the Indus, Ladák, August 25, 1873.
Nos. 577, 608, ♂ ad. et juv. Leh, August 29, 1873.
Nos. 636, 647, ♂ ad. Leh, September 5–7, 1873.
Nos. 815, 913, ♀ ad. et juv. Sháhidúla, October 12–22, 1873.
No. 1473, ♂ ad. Panjah, April 16, 1874.—Length 6·25 inches, wing 3·38, tail 2·7, tarsus 0·94 ; expanse 10·2 ; bill from front 0·4, from gape 0·7 ; length of foot 1·2, spread of foot 0·9 ; middle toe 0·7, hind toe 0·5 ; wings reach within 0·9 of end of tail. Iris brown ; bill black ; feet black, soles yellowish.
Nos. 1507, 1513, 1504, ♂. Panjah, April 14–23, 1874.
No. 1592, ♂. Aktásh, May 5, 1874.
Nos. 1658, ♂, 1661, ♀. Pasrobat, May 13, 1874.
No. 1663, ♂. Chehil Gumbar, May 14, 1874.

Nos. 1676, ♀, 1691, ♂. S.W. of Ighiz Yar, May 18, 1874.
No. 1701, ♀. Yarkand, May 21, 1874.
Nos. 1841, 1847, ♂ ♀. Kugiár, June 1, 1874.

Dr. Stoliczka calls this the commonest bird near Drás. Dr. Henderson states that numbers of specimens were met with from Leh up to the Pangong Lake, and again in Yarkand at the foot of the hills. Colonel Biddulph states that it was very common in Ladák and again in Wakhán, but he did not observe it in Turkestan. Dr. Scully, however, writes:—"This species was observed in great numbers in August frequenting mountain-streams at elevations of from 7000 to 8000 feet. It was very common along the course of the Arpalák River, hopping about among the stones and bushes and moving its tail incessantly." He believes that it breeds in Eastern Turkestan. Dr. Stoliczka mentions that on two occasions he shot a male bird in the plumage of the female.

182. Ruticilla erythrogaster.

Ruticilla erythrogastra (Güld.); Hume & Henders. Lahore to Yark. p. 210 (1873); Severtz. Turkest. Jevotn. p. 65 (1873); Dresser, Ibis, 1876, p. 77; Scully, Str. F. iv. p. 144 (1876); Prjev. in Rowley's Orn. Misc. ii. p. 177 (1877); Bidd. Ibis, 1881, p. 63; Scully, ibid. p. 445; Severtz. Ibis, 1883, p. 68; Seebohm, Cat. B. Brit. Mus. v. p. 347 (1881); Homeyer & Taneré, MT. orn. Ver. Wien, 1883, p. 85; Menzbier, Ibis, 1885, p. 356; Radde, Ornis, iii. p. 487 (1887).
Ruticilla erythrogaster, Oates, Faun. Brit. Ind., Birds, ii. p. 97 (1890).

No. 584, juv. Leh, August 30, 1873.—Length 7·3 inches, wing 4·15, tail 3·1, tarsus 1·17; expanse 12·25; bill from front 0·45, from gape 0·8; length of foot 1·4. Iris brown; bill black; feet black.
No. 694, ♂ juv. Tsúltak, September 15, 1873.
Nos. 707, 710, ♂. Tanksi, September 16, 1873.
Nos. 742. Tanksi, September 18, 1873.
Nos. 761, 762. Lukung, on the Pangong Lake, September 20, 1873.
Nos. 831, 850, 851, ♂ ♀. Sháhidúla, October 21, 1873.
Nos. 1357, 1358, ♂. Altin Artish, February 16, 1874.
No. 1378, ♀. Faizabad, March 2, 1874.
No. 1409, ♀. Aktala, March 22, 1874.
No. 1441, ♂. Tashkúrghán, March 30, 1874.
No. 1497, ♂. Panjah, April 14–23, 1874.
No. 1601, ♀. Sarikol, May 9, 1874.—"Eggs very small yet."
No. 1662, ♂. Pasrobat, May 13, 1874.
No. 1747, ♂. Yarkand, May 15–20, 1874.

The differences in the colour between the summer and the winter plumages is very noticeable in a series of specimens like the above, the red tint being in the summer-killed specimens much paler, while in the winter-killed individuals the breast, lower back, rump, and tail are deep vinous chestnut. The black of the back becomes more intense, and the head purer white in summer.

Dr. Stoliczka's 'Diary' informs us that this Redstart was common near Tanksi on the 16th of September, and again near Aktala on the 22nd of March. On the 15th of April he again notes the species as very common near Panjah, but at that date there was no evidence of its nesting. Colonel Biddulph records it from several places—Muglib in Ladák, 13,400 feet, on

the 16th of September, Karakásh Valley on the 15th of October, Kirog Valley on the way up to the Pámir on the 24th of March, and Aktásh on the 4th of April.

Dr. Henderson writes:—"This handsome Redstart was met with all through Ladák, both in going and returning, and was especially abundant on the return journey in October. It was found as high as 17,800 feet on the snow in the Chang Pass, and again on the other side of the plateau it was observed in Yarkand, from about 15,000 feet to the foot of the hills, but not in the plains."

Dr. Scully gives the following note:—"This Redstart was very common during the months of August and September in the mountains, at elevations of from 10,000 to 18,000 feet, but was never met with in the plains of Eastern Turkestan. It frequents the neighbourhood of streams generally, hopping about on the stones and amongst the small bushes. The Kirghis at Kichik Yailak say that this bird breeds during the months of June and July, in the high mountains near their encampment, and their name for it is 'Kizil Kurgenak,' *i. e.* 'Red Kestrel'!"

Colonel Biddulph has forwarded the following note:—"I first found this Redstart at Leh, and all the way to the Pangong Lake, up to an altitude of 14,000 feet, in September. Afterwards I met with it in the valley of the Karakásh, and again on going up to the Pámir, and in Wakhán, but not in the plains of Turkestan. We found them generally in rocky ground, more or less covered with bushes, on which they often perched. I did not observe that they had any predilection for water."

Genus **RHYACORNIS.**

183. Rhyacornis fuliginosa.

Ruticilla fuliginosa (Vig.); Hume & Henders. Lahore to Yark. p. 212, pl. xv. (1873); Prjev. in Rowley's Orn. Misc. ii. p. 177 (1877).

Rhyacornis fuliginosa, Oates, Faun. Brit. Ind., Birds, ii. p. 98 (1890).

Dr. Henderson procured this species at Púnch, below the Haji Pir Pass, on the way down from Kashmir.

Genus **CYANECULA.**

184. Cyanecula cærulecula.

Lusciola suecica, Severtz. Turkest. Jevotn. p. 65 (1873).

Cyanecula suecica (nec L.); Hume & Henders. Lahore to Yark. p. 214 (1873); Dresser, Ibis, 1875, p. 341; Blanf. East. Persia, ii. p. 169 (1876); Scully, Str. F. iv. p. 145 (1876); Wardlaw Ramsay, Ibis, 1880, p. 58; Bidd. Ibis, 1881, p. 65; Scully, t. c. p. 447; C. Swinh. Ibis, 1882, p. 108; Severtz. Ibis, 1883, p. 68; Homeyer & Tancré, MT. orn. Ver. Wien, 1883, p. 84; Scully, J. A. S. Beng. lvi. p. 82 (1887); Oates, Faun. Brit. Ind., Birds, ii. p. 99 (1889).

Erythacus cæruleculus (Pall.); Seebohm, Cat. B. Brit. Mus. v. p. 308 (1881); Sharpe, Trans. Linn. Soc. (2) Zool. v. p. 73 (1889).

Cyanecula cærulecula, Prjev. in Rowley's Orn. Misc. ii. p. 180 (1877); Zarudn. Ois. Transcasp. p. 37 (1885).

No. 489, ♂. Kharbu, Ladák, August 21, 1873.—Length 6 inches, wing 2·9, tail 2·25, tarsus 1·1; expanse 9; bill from front 0·4, from gape 0·7; length of foot 1·45. Bill black; feet horny black.

No. 495. Kharbu, August 21, 1873.

Nos. 572, 573. Leh, August 29, 1873.
No. 602. Leh, August 31, 1873.
No. 762. Leh, September 10, 1873.
No. 938. Sanju, October 31, 1873.
No. 1472. Panjah, April 16, 1874.—Length 5·8 inches, wing 2·75, tarsus 1·16; expanse 8·7; bill from front 0·4, from gape 0·7; length of foot 1·4, spread of foot 1. Iris brown; bill horny black; feet dark brown, tarsi a little paler, soles yellow; middle toe 0·73, hind toe 0·58; wings reach within 1·3 of end of tail.
Nos. 1805, 1811, 1812. Kárghalik, May 29, 1874.
No. 1838. N. of Kugiár, June 1, 1874.

Dr. Stoliczka states in his 'Diary' that this species was very common along the road near Karghalik on the 29th of May, and he saw a pair carrying grass for their nest. Colonel Biddulph says that it was seen in great numbers in September, from Leh to the Pangong Lake, and on the return journey it was plentiful in June and July in the Indus and Nubra valleys. Dr. Henderson obtained it on the "Khush Maidán or Happy Plain" (so-called on the *lucus a non lucendo* principle, it being one of the most miserable deserts in creation) at an elevation of 16,000 feet; at Sháhidúla at about 11,000 feet; and at Sanju, about 6000 feet, where, by the way, one quite young bird was obtained, proving that the species breeds in Yarkand. Dr. Scully observes:—"This species is a seasonal visitant to the plains of Eastern Turkestan, arriving about the end of March, and leaving in September." He gives an interesting note on the habits and breeding of the species near Yarkand in May. The Turki name for the Bluethroat is "Chaghchi," an appellation given to it because it is said to make a sound resembling the noise of the spinning-wheels used by the women of Yarkand.

185. Cyanecula wolfi.

Lusciola suecica, β. orientalis, Severtz. Turkest. Jevotn. p. 65 (1873).
Cyanecula wolfi, Dresser, Ibis, 1875, p. 342; Oates, Faun. Brit. Ind., Birds, ii. p. 100 (1890).
Cyanecula leucocyanea, Brehm; Bidd. Ibis, 1881, p. 65; Scully, t. c. p. 447; Bidd. Ibis, 1882, p. 278.
Erithacus cyaneculus (Wolf); Seebohm, Cat. B. Brit. Mus. v. p. 311 (1881).

No. 473. Shargol, August 20, 1873.

Colonel Biddulph sends a note:—"On our return journey we found numbers in the Nobra valley in June, where they were more plentiful than *C. cærulecula,* which was also present. In the Indus valley both species were noticed, but *C. cærulecula* was the more numerous."

Genus **CALLIOPE.**

186. Calliope pectoralis.

Calliope bailloni, Severtz. Turkest. Jevotn. pp. 65, 122 (1873); id. Str. F. iii. p. 429 (1875).
Calliope pectoralis, Gould; Dresser, Ibis, 1876, p. 78; Bidd. Ibis, 1881, p. 64; Scully, t. c. p. 447; Severtz. Ibis, 1883, p. 67; Oates, Faun. Brit. Ind., Birds, ii. p. 103 (1890).
Erythacus pectoralis (Gould); Seebohm, Cat. B. Brit. Mus. v. p. 306 (1881).

No. 394, ♀. Mataian, August 14, 1873.

No. 413, ♂. Mataian, August 15, 1873.—Length 6·3 inches, wing 2·9, tail 2·45, tarsus 1·15; expanse 9; bill from front 0·5, from gape 0·78. Iris brown; bill black; feet black, tarsi paler.

Nos. 416, 419, juv. Mataian, August 15, 1873.

Dr. Stoliczka mentions finding this species with fully fledged young near Mataian. Colonel Biddulph saw it in Ladák, just below the Zoji-lá.

Genus **IANTHIA.**

187. Ianthia rufilata.

Tarsiger rufilatus (Hodgs.); Sharpe, Cat. B. Brit. Mus. iv. p. 256 (1879); Scully, Ibis, 1881, p. 446.
Nemura cyanura (nec Pall.); Bidd. Ibis, 1881, p. 64.
Ianthia rufilata, Oates, Faun. Brit. Ind., Birds, ii. p. 106 (1890).

No. 324. Sonámarg, August 11, 1873.—Bill black; feet brownish black; iris brown. Length 5·5 inches, wing 3·05, tail 2·3, tarsus 0·94.

No. 325, ♂. Sonámarg, August 11, 1873.—Bill blackish horny; feet dark horny brown; iris dark brown. Length 5·75 inches, wing 3·2, tail 2·45, tarsus 1·0.

Genus **ADELURA.**

188. Adelura cæruleocephala.

Ruticilla cæruleocephala (Vig.); Hume & Henders. Lahore to Yark. p. 211, pl. xiv. (1873); Seebohm, Cat. B. Brit. Mus. v. p. 353 (1881).
Adelura cæruleocephala, Wardlaw Ramsay, Ibis, 1880, p. 58; Oates, Faun. Brit. Ind., Birds, ii. p. 108 (1890).

Dr. Henderson met with this species in the Sind Valley and at Púnch, on the way down from Kashmir.

Genus **COPSYCHUS.**

189. Copsychus saularis.

Copsychus saularis (L.); Hume & Henders. Lahore to Yark. p. 202 (1873); Sharpe, Cat. B. Brit. Mus. vii. p. 61 (1883); Oates, Faun. Brit. Ind., Birds, ii. pp. 116 (1890).

No. 145. Oori, July 23, 1873.

A young specimen in spotted plumage.

Dr. Henderson only observed this bird in the low hills through which the road to Kashmir from the Punjab first passes on leaving the plains. This species seems never to ascend the hills to any great height.

Subfamily *TURDINÆ.*

Genus **MERULA.**

190. Merula maxima.

Merula maxima, Seebohm, Cat. B. Brit. Mus. v. p. 405 (1881); C. Swinhoe, Ibis, 1882, p. 105; Menzbier, Ibis, 1885, p. 357; Oates, Faun. Brit. Ind., Birds, ii. p. 123 (1890).

Merula vulgaris, Ray; Scully, Str. F. iv. p. 139 (1876); id. J. A. S. Beng. lvi. p. 81 (1887).
Merula merula (L.); Sharpe, Trans. Linn. Soc. (2) Zool. v. part 3, p. 72 (1889).

No. 916, ♀. Sanju, November 1, 1873.—Wings reach within 3 inches of end of tail. Total length 11·8 inches, wing 5·4, tail 5·0, tarsus 1·25; expanse 17·0; bill from front 0·85, from gape 1·32. Iris brown; bill horny black; feet horny black.

Nos. 954, 955. Bora, November 4, 1873.—[Wing 5·3 inches.] Native name "Karha Shachshák."

No. 1044. Yarkand, November 23, 1873.

Nos. 1100, 1101, 1120. Yangihissár, December 1, 1873.—[Wing 5·3–5·4 inches.]

No. 1214, ♂. Káshghar, January 20, 1874.—Length 11·6 inches, wing 5·3; bill from front 0·9, from gape 1·3. Iris dark brown; bill yellow, streaked with black about the base; feet black; eyelid yellow.

The length of wing agrees with the larger dimensions given by Seebohm for the large Central Asian race of the Blackbird, but does not quite come up to the 5·85 given by him.

No. 1215, ♀. Káshghar, January 10, 1874.—Length 11·5 inches, wing 5·2, tail 4·8, tarsus 1·4. Iris dark brown; upper mandible black, the lower one dark brown; feet blackish brown; margin of soles pale yellow.

Dr. Stoliczka's 'Diary' notes that this Blackbird was common near Bora and Yangihissár. Dr. Scully obtained a pair near Yarkand in February, and says that it was common, during the winter, near Káshghar and Yarkand. It seemed to keep principally among *Eleagnus* trees and thorn-bushes in the vicinity of unfrozen bits of water. It migrated northwards in spring, repairing to the hills and the country about Marálbáshi. It was said to feed principally on berries, &c., and its Turki name is "Maina."

191. Merula castanea.

Merula castanea, Gould; Seebohm, Cat. B. Brit. Mus. v. p. 259 (1881); Oates, Faun. Brit. Ind., Birds, ii. p. 128 (1890).

Nos. 91, 93. Dungagally, Murree, July 4, 1873.
No. 343. Sonámarg, August 11, 1873.

192. Merula boulboul.

Merula boulboul (Lath.); Seebohm, Cat. B. Brit. Mus. v. p. 248 (1881); Oates, Faun. Brit. Ind., Birds, ii. p. 130 (1890).

No. 12, ♂. Murree, June 23, 1873.
No. 40, ♂. Murree, June 25, 1873.
No. 63, ♀. Murree, June 30, 1873.
No. 108, ♂. Murree, July 9, 1873.

193. Merula atrigularis.

Merula atrigularis (Temm.); Seebohm, Cat. B. Brit. Mus. v. p. 269 (1881); Homeyer & Tancré, MT. orn. Ver. Wien, 1883, p. 87; Scully, Ibis, 1881, p. 439; id. J. A. S. Beng. lvi. p. 81 (1887); Sharpe, Trans. Linn. Soc. (2) Zool. v. part 3, p. 72 (1889); Oates, Faun. Brit. Ind., Birds, ii. p. 131 (1890).

Planesticus atrogularis, Hume & Henders. Lahore to Yark. p. 192 (1873); Seully, Str. F. iv. p. 140 (1876).

Turdus atrigularis, Severtz. Turkest. Jevotn. pp. 64, 118 (1873); Dresser, Ibis, 1875, p. 332; Blanf. East. Persia, ii. p. 158 (1876); Biddulph, Ibis, 1881, p. 53; C. Swinhoe, Ibis, 1882, p. 105; Zarudn. Ois. Transcasp. p. 40 (1885).

Turdus mystacinus, Severtz. Turkest. Jevotn. pp. 64, 118, 119 (1873); Dresser, Ibis, 1875, p. 332; Severtz. Ibis, 1883, p. 70; Menzbier, Ibis, 1885, p. 356.

Nos. 924, 926, 927. Sanju, October 29, 1873.
No. 928. Khushtágh, November 2, 1873.
No. 971. Kárghalik, November 6, 1873.—Native name "Shackshak."
Nos. 1082, 1084. Yarkand, November 28, 1873.
Nos. 1099, 1109. Yangihissár, December 1, 2, 1873.
No. 1128. Káshghar, December 10, 1873.
Nos. 1220, 1221. Káshghar, January 21, 1874.
No. 1297. Káshghar, February 2, 1874.
No. 1237. Marálbáshi, January, 1874.

Dr. Stoliczka states in his 'Diary' that this Thrush was very numerous near Khushtágh on the 2nd of November, feeding on the seeds of *Eleagnus*. It was again common near Yangihissár on the 1st of December.

Colonel Biddulph records it from Yarkand on the 26th of November, and from Marálbáshi in January. He writes as follows:—"First seen at Sanju in November. It was common about Káshghar all through the winter. I also obtained a specimen at Marálbáshi, but I never saw it in Wakhán or on the Pámir, though we again found it when in May we returned to the plains of Yarkand."

Dr. Henderson met with this species in October from Chagra (15,000 feet) above the Pangong Lake, throughout Ladák and Kashmir, and by November it was widely spread over the plains of the Punjab.

Dr. Scully writes:—"This species was first met with at Sulaghz Langar in September, and was a common bird in the plains, in the neighbourhood of Káshghar, Yarkand, &c., during the winter. It was usually seen about trees lining water-courses or growing near tanks. The bird disappeared entirely in spring, migrating in a north-easterly direction, towards the hills and the Jot district, it is said, where it was reported to breed. It feeds chiefly on *Eleagnus*-berries called 'jigda' in Turki, and commonly known as 'Trebizond dates'; hence its name 'Jigda chuk,' *i. e.* 'Jigda-eater.'"

194. Merula unicolor.

Merula unicolor (Tick.); Seebohm, Cat. B. Brit. Mus. v. p. 271 (1881); Oates, Faun. Brit. Ind., Birds, ii. p. 132 (1890).

Geocichla unicolor (Tiek.); Hume & Henders. Lahore to Yark. p. 192 (1873).

Nos. 194, 218, 219, 222, 225, 226. Srinagar, July 28–31, 1873.—Native name "Kástúr."

Colonel Biddulph also obtained this Ouzel near Srinagar in July, and again at Baramula on the 1st of August, but did not observe it out of Kashmir. Dr. Henderson states that it was very common in the latter country, but was not seen beyond the Zoji-lá.

195. Merula obscura.

Merula obscura (Gm.); Seebohm, Cat. B. Brit. Mus. v. p. 273 (1881); Oates, Faun. Brit. Ind., Birds, ii. p. 134 (1890).

Turdus pallens, Pall.; Severtz. Turkest. Jevotn. p. 65 (1873); Dresser, Ibis, 1875, p. 334; Prjev. in Rowley's Orn. Misc. ii. p. 198 (1877).

No. 903. Sanju, October 28, 1873.

Genus **TURDUS.**

196. Turdus viscivorus.

Turdus viscivorus, Linn.; Severtz. Turkest. Jevotn. p. 65 (1873); Dresser, Ibis, 1875, p. 334; Blanf. East. Persia, ii. p. 157 (1876); Wardlaw Ramsay, Ibis, 1880, p. 54; Seebohm, Cat. B. Brit. Mus. v. p. 194 (1881); Biddulph, Ibis, 1881, p. 53; Scully, t. c. p. 439; C. Swinhoe, Ibis, 1882, p. 105; Homeyer & Tancré, MT. orn. Ver. Wien, 1883, p. 86; Radde, Ornis, iii. p. 488 (1887); Oates, Faun. Brit. Ind., Birds, ii. p. 148 (1890).

No. 388. Baltal, August 12, 1873.

Genus **PETROPHILA.**

197. Petrophila erythrogaster.

Petrophila erythrogaster (Vig.); Oates, Faun. Brit. Ind., Birds, ii. p. 143 (1890).

Monticola erythrogaster (Vig.); Seebohm, Cat. B. Brit. Mus. v. p. 325 (1881).

No. 94, ♂. Dungagally, near Murree, July 4, 1873.

198. Petrophila cinclorhyncha.

Monticola cinclorhyncha (Vig.); Seebohm, Cat. B. Brit. Mus. v. p. 320 (1881); Scully, Ibis, 1881, p. 438.

Oreœcetes cinclorhynchus (Vig.); Wardlaw Ramsay, Ibis, 1880, p. 54; Biddulph, Ibis, 1881, p. 53.

Petrophila cinclorhyncha (Vig.); Oates, Faun. Brit. Ind., Birds, ii. p. 144 (1890).

Nos. 3, 4, ♀ ad. Murree, June 20, 1873.

Nos. 38, 53, ♂ ad. Murree, June 26, 1873.

No. 152, ♂ juv. Urumbu, July 24, 1873.

No. 353, ♂ ad. Sonámarg, August 12, 1873.—Length 7·6 inches, wing 4·2, tail 2·8, tarsus 0·9; expanse 12·6; bill from front 0·77, from gape 1·1. Iris brown; bill horny black; feet pale horny.

Nos. 357, 358, ♂ juv. Sonámarg, August 12, 1873.

The young males, even in their first or spotted plumage, are easily recognizable, as they show the white wing-spot very plainly.

Colonel Biddulph procured a specimen near Sonámarg on the 17th of July, but did not see the species anywhere else.

199. Petrophila cyana.

Petrocossyphus cyanus (L.); Hume & Henders. Lahore to Yark. p. 190 (1873); Dresser, Ibis, 1875, p. 335; Wardlaw Ramsay, Ibis, 1880, p. 54; Bidd. Ibis, 1881, p. 53.

Petrocincla cyane, Severtz. Turkest. Jevotn. p. 65 (1873).
Monticola cyanea, Blanf. East. Persia, ii. p. 155 (1876); Zarudn. Ois. Transcasp. p. 39 (1885).
Monticola cyanus, Seebohm, Cat. B. Brit. Mus. v. p. 316 (1881); Scully, Ibis, 1881, p. 438; C. Swinh. Ibis, 1882, p. 105; Severtz. Ibis, 1883, p. 68; Scully, J. A. S. Beng. lvi. p. 82 (1887); Sharpe, Trans. Linn. Soc. (2) Zool. v. p. 73 (1889).
Petrophila cyanus, Oates, Faun. Brit. Ind., Birds, ii. p. 146 (1890).

No. 425, ♂ juv. Drás, August 16, 1873.
A young bird in nearly complete blue plumage, moulting from the spotted or nestling plumage.
No. 426, ♀. Drás, August 16, 1873.
No. 512. Kharbu, August 22, 1873.
Nos. 548, 565. Leh, August 28, 1873.

Colonel Biddulph says that he only saw this Rock-Thrush in the Indus Valley and a little way out of it to Drás. Dr. Henderson writes:—"The Blue Rock-Thrush was only met with in Ladák, and there only on the upward journey in June and July. Solitary individuals were seen throughout Ladák west of Leh, at Shargol and other places, near streams &c."

Genus **MONTICOLA.**

200. Monticola saxatilis.

Petrocincla saxatilis (L.); Severtz. Turkest. Jevotn. p. 65 (1873); Homeyer & Tancré, MT. orn. Ver. Wien, 1883, p. 87; Zarudn. Ois. Transcasp. p. 39 (1885); Radde, Ornis, iii. p. 487 (1887).
Monticola saxatilis, Hume & Henders. Lahore to Yark. p. 190 (1873); Dresser, Ibis, 1875, p. 335; Blanf. East. Persia, ii. p. 156 (1876); Scully, Str. F. iv. p. 139 (1876); Prjev. in Rowley's Orn. Misc. ii. p. 201 (1877); Bidd. Ibis, 1881, p. 53; Scully, ibid. p. 439; Severtz. Ibis, 1883, p. 68; Sharpe, Trans. Linn. Soc. (2) Zool. v. p. 73 (1889); Oates, Faun. Brit. Ind., Birds, ii. p. 147 (1890).

No. 640. Leh, September 6, 1873.—Length 8 inches, wing 4·68, tail 2·35, tarsus 1·15; bill from front 0·7, from gape 1·1. Iris dark brown; bill horny black, lower mandible paler; feet black.
An apparently adult female in winter plumage.
No. 1678. S.W. of Ighiz Yar, May 18, 1874.
An adult male in full plumage.

Dr. Stoliczka states that this Rock-Thrush was rare near Ighiz Yar. Dr. Henderson obtained a young male, a bird of the year, at Sháhidúla, in Hill Yarkand, on the 21st of September. Dr. Scully gives the following note:—"This species was first noticed about the end of September at some of the small oases in the desert-ground between Sanju and Kárghalik, at an elevation of about 6000 feet. The birds were tolerably numerous, hopping about in cultivated fields. After that these birds were never observed until the following year, when they were met with on the banks of the Karakásh at an elevation of about 12,000 feet. They frequented grassy ground, and when alarmed flew up and perched on the neighbouring rocks."

Family CINCLIDÆ.

Genus **CINCLUS.**

201. Cinclus kashmiriensis.

Hydrobata cashmeriensis (Gould); Hume & Henders. Lahore to Yark. p. 189 (1873); Prjev. in Rowley's Orn. Misc. ii. p. 201 (1877); Biddulph, Ibis, 1881, p. 52.
Cinclus aquaticus, var. *cashmeriensis*, Blanf. East. Persia, ii. p. 212 (1876).
Cinclus cashmeriensis, Sharpe, Cat. B. Brit. Mus. vi. p. 312 (1881); Scully, Ibis, 1881, p. 438.
Cinclus kashmiriensis, Oates, Faun. Brit. Ind., Birds, ii. p. 162 (1890).

No. 713. Tanksi, September 16, 1873.
No. 699. Tsúltak, north of Chang-lá, September 15, 1873.

Dr. Stoliczka says that he noticed this species at Zingral, about 15,500 feet, on the road to the Chang-lá. Colonel Biddulph also obtained specimens in streams under and on both sides of the same pass. Dr. Henderson writes:—"Several specimens of this White-breasted Dipper were procured and numbers seen, not in Kashmir, but in Eastern Ladák, in the stream which runs from Chagra into the Pangong Lake. It appears to be a permanent resident here, as it was noticed and shot in this locality both on going and coming. A nestling obtained on the 14th of July could not long have left the nest, and old birds were seen on this stream on the 8th of October, at an elevation of 15,000 feet, when, except quite at its centre, it was a mass of solid ice."

Dr. Lansdell met with this species at Tischkun on the 1st of November, 1888.

202. Cinclus asiaticus.

Cinclus asiaticus, Swains.; Severtz. Turkest. Jevotn. p. 66 (1873); Dresser, Ibis, 1876, p. 175; Scully, Ibis, 1881, p. 437; Sharpe, Cat. B. Brit. Mus. vi. p. 314 (1881); Scully, J. A. S. Beng. lvi. p. 83 (1887); Oates, Faun. Brit. Ind., Birds, ii. p. 163 (1890).
Hydrobata asiatica, Hume & Henders. Lahore to Yark. p. 188 (1873); Bidd. Ibis, 1881, p. 52.

No. 1653. Tarbashi, May 12, 1874.

Dr. Henderson says:—"The Indian Dipper was noticed to be very common on the return journey all the way from Kargil in Ladák to Púnch at the foot of the hills, leading from the plains of the Panjab into Kashmir by the Haji Pir Pass. Curiously enough, none were noticed on the upward route; but the bird in May and June is usually much higher up than in the autumn and winter."

203. Cinclus leucogaster.

Cinclus leucogaster, Bp.; Severtz. Turkest. Jevotn. p. 66 (1873); Dresser, Ibis, 1875, p. 175; Sharpe, Cat. B. Brit. Mus. vi. p. 314 (1881); Homeyer & Tancré, MT. orn. Ver. Wien, 1883, p. 87.

No. 712. Tanksi, September 16, 1873.—A young bird.
No. 912. North of Sanju Pass, October 26, 1873.—Shot by Dr. Bellew.

No. 1370. Tughamati, February 18, 1874.
No. 1652. Tarbashi, May 12, 1874.

This latter specimen shows evident traces of breeding, the plumage being much worn.

Colonel Biddulph writes :—" This was obtained just as we entered the Hills *en route* to the Pámir at an elevation of 5500 feet."

204. Cinclus sordidus.

Hydrobata sordida, Gould ; Hume & Henders. Lahore to Yark. p. 189 (1873) ; Prjev. in Rowley's Orn. Misc. ii. p. 202 (1877).
Cinclus sordidus, Sharpe, Cat. B. Brit. Mus. vi. p. 317 (1881) ; Oates, Faun. Brit. Ind., Birds, ii. p. 165 (1890).

Dr. Henderson procured a single specimen at Kargil in Ladák, on the 23rd of October.

Family TROGLODYTIDÆ.

Genus **ANORTHURA**.

205. Anorthura pallida.

Troglodytes nepalensis (nec Blyth) ; Severtz. Turkest. Jevotn. p. 66 (1873).
Troglodytes europæus (nec V.) ; Severtz. t. c. p. 138 (1873).
Troglodytes pallidus, Hume, Str. F. iii. p. 219, note (1875).
Troglodytes parvulus (nec Koch), Dresser, Ibis, 1876, p. 175.
Anorthura pallida, Sharpe, Cat. B. Brit. Mus. vi. p. 273 (1881).

No. 936. Sanju, November 1, 1873.—Length 4·5 inches, wing 2·0, tail 1·5, tarsus 0·7. Iris brown ; upper mandible blackish, the lower one paler ; feet pale horny brown.
No. 956. Bora, November 4, 1873.
Nos. 997, 1007, 1024, 1035, 1086. Yarkand, November 11–28, 1873.
No. 1118. Yangihissár, December 2, 1873.
No. 1227. Káshghar, January 23, 1874.
No. 1339. Káshghar, February 11, 1874.

Colonel Biddulph writes :—" We got this at Sanju, and we also found it about Yarkand and Káshghar. We often noticed it about the willow-trees in the fields."

206. Anorthura neglecta.

Troglodytes nipalensis (nec Hodgs.) ; Hume & Henders. Lahore to Yark. p. 187 (1873).
Anorthura neglecta (Brooks) ; Sharpe, Cat. B. Brit. Mus. vi. p. 278 (1881) ; Oates, Faun. Brit. Ind., Birds, i. p. 338 (1889).

Dr. Henderson obtained a specimen in the Sind Valley, but observes that it seems to be rare in Kashmir.

Family ACCENTORIDÆ.

Genus **ACCENTOR.**

207. Accentor nepalensis.

Accentor nipalensis, Hodgs.; Hume & Henders. Lahore to Yark. p. 234 (1873); Prjev. in Rowley's Orn. Misc. ii. p. 185 (1877); Bidd. Ibis, 1881, p. 74; Scully, t. c. p. 568; Bidd. Ibis, 1882, p. 281; Sharpe, Cat. B. Brit. Mus. vii. p. 664 (1883); Oates, Faun. Brit. Ind., Birds, ii. p. 166 (1890).

Dr. Henderson procured an example on the Pangong Lake on the 10th of October, but the specimen appears not to have passed into the Hume Collection, and has apparently perished.

208. Accentor himalayanus.

Accentor himalayanus, Blyth, J. A. S. Beng. xi. p. 187 (1842); Oates, Faun. Brit. Ind., Birds, ii. p. 168 (1890).

Accentor altaicus, Brandt; Severtz. Turkest. Jevotn. pp. 66, 133 (1873); id. Str. F. iii. p. 428 (1875); Dresser, Ibis, 1876, p. 91; Bidd. Ibis, 1881, p. 74; Scully, t. c. p. 569; Severtz. Ibis, 1883, p. 65; Homeyer & Tancré, MT. orn. Ver. Wien, 1883, p. 85; Sharpe, Cat. B. Brit. Mus. vii. p. 660 (1883).

No. 812. Balakchi, October 17, 1873.

Genus **THARRHALEUS.**

209. Tharrhaleus fulvescens.

Accentor fulvescens, Severtz. Turkest. Jevotn. pp. 66, 132 (1873); id. Str. F. iii. p. 428 (1875); Prjev. in Rowley's Orn. Misc. ii. p. 186 (1877); Bidd. Ibis, 1881, p. 75; Scully, t. c. p. 569; Bidd. Ibis, 1882, p. 281, pl. viii.; Severtz. Ibis, 1883, p. 84; Sharpe, Cat. B. Brit. Mus. vii. p. 655 (1883); Menzbier, Ibis, 1885, p. 356.

Accentor montanellus (nec Pall.); Scully, Str. F. iv. p. 155 (1876).

Tharrhaleus fulvescens, Oates, Faun. Brit. Ind., Birds, ii. p. 171 (1890).

No. 813. Sháhidúla, October 19, 1873.

No. 833. N. of Suget Pass, Sháhidúla, October 1873 (*Dr. Bellew*).

No. 844, ♂. S. of Sanju Pass, October 22, 1873.—Bill black; feet pale fleshy; iris reddish brown. Length 6·6 inches, wing 3·2, tail 2·75.

Nos. 899, 900, 908, 910. Sanju, October 28, 1873.

No. 1193. S. of Chakmak, January 9, 1874.

No. 1374. Uibulák, 7000 feet, February 23, 1874.

No. 1453. Aktásh, April 3, 1874.

No. 1593. Sarikol, May 7, 1874.

Dr. Stoliczka first identified this species as a new one in his 'Diary,' on shooting one near Sháhidúla on the 19th of October. It was common near Sanju, and he saw it again at Jigda on the 26th of February. Colonel Biddulph procured specimens at Tám, on the 25th of October, from 6000 to 8000 feet, and at Aktala on the 22nd of March. He writes to us:—"Found in the lower hills coming down from Sanju, and the same going up to the Pámir. They were very numerous in the Kulustan valley."

210. Tharrhaleus rubeculoides.

Accentor rubeculoides, Hodgs.; Hume & Henders. Lahore to Yark. p. 234 (1873); Prjev. in Rowley's Orn. Misc. ii. p. 187 (1887); Sharpe, Cat. B. Brit. Mus. vii. p. 657 (1883).
Tharrhaleus rubeculoides, Oates, Faun. Brit. Ind., Birds, ii. p. 169 (1890).

No. 585, ad. Leh, August 30, 1873.
Nos. 589, juv., 590, juv., 591, ad., 594, ad. Leh, August 30, 1873.
Nos. 626, 634, juv., 638. Leh, September 4–5, 1873.

Dr. Stoliczka notes in his 'Diary' that both old and young birds were common near Leh early in September. Colonel Biddulph also procured specimens at Tanksi (13,200 feet) on the 15th of September. He says that it was also seen on crossing the Sakti Pass, but nowhere else. Dr. Henderson states that it was "seen in considerable numbers on his return journey, from one march beyond the Pangong Lake right through Ladák. It frequented marshy ground and the banks of streams, hopping about from rock to rock."

211. Tharrhaleus jerdoni.

Accentor jerdoni, Brooks; Bidd. Ibis, 1881, p. 75; Scully, t. c. p. 569; Sharpe, Cat. B. Brit. Mus. vii. p. 660 (1883).
Accentor strophiatus (nec Hodgs.); Hume & Henders. Lahore to Yark. p. 234 (1873).
Tharrhaleus jerdoni, Oates, Faun. Brit. Ind., Birds, ii. p. 172 (1890).

No. 339, juv. Sonámarg, August 11, 1873.
Nos. 402, juv., 406, ad. Mataian, 11,200 feet, August 14, 1873.

To this species doubtless belongs the young bird spoken of by Dr. Henderson as *A. strophiatus* (*l. c.*). Colonel Biddulph states that he obtained a male in the Karakásh Valley.

Family TIMELIIDÆ.

Genus **GARRULAX.**

212. Garrulax albigularis.

Garrulax albogularis (Gould); Sharpe, Cat. B. Brit. Mus. vii. p. 439 (1883); Oates, Faun. Brit. Ind., Birds, i. p. 82 (1889).

No. 9. Murree, June 21, 1873.
Nos. 95, 96. Changligally, July 5, 1873.
No. 109. Murree, July 10, 1873.

Genus **TROCHALOPTERUM.**

213. Trochalopterum erythrocephalum.

Trochalopterum erythrocephalum (Vig.); Sharpe, Cat. B. Brit. Mus. vii. p. 360 (1883); Oates, Faun. Brit. Ind., Birds, i. p. 89 (1889).

No. 97. Changligally, near Murree, July 5, 1873.

214. Trochalopterum simile.

Trochalopterum simile, Hume, Ibis, 1871, p. 408; id. & Henders. Lahore to Yark. p. 193, pl. vii. (1873); Bidd. Ibis, 1881, p. 53; Scully, t. c. p. 439; Oates, Faun. Brit. Ind., Birds, i. p. 96 (1889).

Nos. 10, 20, 30, 56. Murree, June 1873.
No. 90. Dungagally, July 4, 1874.

All these specimens have the grey on the wings and tail characteristic of the western race which Mr. Hume has called *T. simile*, and they show no approach to the golden-winged *T. variegatum*. I reverse my previous opinion that it is the same as the latter species, and follow Mr. Oates in keeping the two species distinct.

Dr. Henderson found this species very common at Baramula, west of Srinagar, in November. It has a peculiar call, like " wheet-ooi-ooi."

215. Trochalopterum lineatum.

Trochalopterum lineatum (Vig.); Hume & Henders. Lahore to Yark. p. 195, pl. viii. (1873); Bidd. Ibis, 1881, p. 54; Scully, t. c. p. 440; Bidd. Ibis, 1882, p. 272; Sharpe, Cat. B. Brit. Mus. viii. p. 377 (1883); Oates, Faun. Brit. Ind., Birds, i. p. 101 (1889).

Nos. 24, 28. Murree, June 24, 1873.
No. 159. Baramula, July 25, 1873.

According to Dr. Henderson, this species was very abundant from Gond all the way through Kashmir on the return journey in October.

Genus **ARGYA.**

216. Argya caudata.

Chattorhea caudata (Dum.); Hume & Henders. Lahore to Yark. p. 197, pl. ix. (1873); C. Swinh. Ibis, 1882, p. 105.

Argya caudata, Sharpe, Cat. B. Brit. Mus. vii. p. 393 (1883); Oates, Faun. Brit. Ind., Birds, i. p. 106 (1889).

No. 129. Tinali, July 18, 1873.

Dr. Henderson states that this species was very common on the low hills on the roads leading into the plains of the Punjab.

Genus **POMATORHINUS.**

217. Pomatorhinus erythrogenys.

Pomatorhinus erythogenys, Vig.; Sharpe, Cat. B. Brit. Mus. vii. p. 430 (1883); Oates, Faun. Brit. Ind., Birds, i. p. 124 ((1889).

No. 16. Murree, June 23, 1873.

Subfamily *BRACHYPTERYGINÆ.*

Genus **MYIOPHONEUS.**

218. Myiophoneus temmincki.

Myiophoneus temmincki, Vig.; Severtz. Turkest. Jevotn. p. 65 (1873); Hume & Henders. Lahore to Yark. p. 187 (1873); Dresser, Ibis, 1875, p. 335; Bidd. Ibis, 1881, p. 52; Scully, t. c. p. 437; C. Swinhoe, Ibis, 1882, p. 105; Sharpe, Cat. B. Brit. Mus. vii. p. 7 (1883); id. Trans. Linn. Soc. (2) Zool. v. p. 75 (1889); Oates, Faun. Brit. Ind., Birds, i. p. 178 (1889).

No. 111. Murree, July 11, 1873
No. 284. Gond, August 8, 1873.

Colonel Biddulph observes :—"On the upward journey I only saw this in Kashmir, where it is very common in the Sind Valley, but coming back I saw it at Drás, in July."

Dr. Henderson observes :—"The Yellow-billed Whistling-Thrush, so common throughout the lower Himalayas, south of the Snowy Range, was met with abundantly from the foot of the hills leading into Kashmir right up to the Zoji-la."

Genus **LARVIVORA.**

219. Larvivora brunnea.

Larvivora brunnea, Hodgs.; Oates, Faun. Brit. Ind., Birds, i. p. 182 (1889).
Erythacus brunneus (Hodgs.); Seebohm, Cat. B. Brit. Mus. v. p. 302 (1881).

No. 33. Murree, June 25, 1873.
No. 106. Murree, July 9, 1873.

Genus **HODGSONIUS.**

220. Hodgsonius phœnicuroides.

Hodgsonius phœnicuroides (Hodgs.); Hume & Henders. Lahore to Yark. p. 187, pl. vi. (1873); Prjev. in Rowley's Orn. Misc. ii. p. 179 (1877); Sharpe, Cat. B. Brit. Mus. vii. p. 81 (1883); Oates, Faun. Brit. Ind., Birds, i. p. 190 (1889).

No. 321, ♀. Sonámarg, August 11, 1873.—Bill dark horny; tarsi fleshy violaceous, feet pale horny; iris brown. Length 7·4 inches, wing 2·8, tail 3·1, tarsus 1·15.
Nos. 327, adult, 328, 338, juv. Sonámarg, August 11, 1873.

Dr. Stoliczka states that this bird, which he says is "like *Dumeticola,*" was rare near Sonámarg. Dr. Henderson procured one specimen in Kashmir at the head of the Sind Valley. Colonel Biddulph says it was only noticed by him in Kashmir.

Subfamily *SIBIINÆ.*

Genus **LIOPTILA.**

221. Lioptila capistrata.

Malacias capistrata (Vig.); Sharpe, Cat. B. Brit. Mus. vii. p. 400 (1883).
Lioptila capistrata, Oates, Faun. Brit. Ind., Birds, i. p. 196 (1889).

No. 57. Murree, June 28, 1873.
No. 81. Murree, July 2, 1873.

Subfamily *LIOTRICHINÆ.*

Genus **LIOTHRIX.**

222. Liothrix lutea.

Liothrix lutea (Scop.); Sharpe, Cat. B. Brit. Mus. vii. p. 644 (1883); Oates, Faun. Brit. Ind., Birds, i. p. 221 (1889).

Nos. 147, 153. Urumbu, July 24, 1873.

Genus **PTERUTHIUS.**

223. Pteruthius erythropterus.

Pteruthius erythropterus (Vig.); Oates, Faun. Brit. Ind., Birds, i. p. 224 (1889).

No. 105, ♀. Murree, July 9, 1873.
No. 112, ♂. Murree, July 11, 1873.
No. 114, ♂. Murree, July 12, 1873.
No. 116, ♀. Murree, July 13, 1873.

No 112 is a young male with a brown head and back, but having the black ear-stripe and black wings of the adult male, with the exception that the wing-coverts have the ends brown. The tail is black, but is tipped with white, as in the adult female.

Family PYCNONOTIDÆ.

Genus **HYPSIPETES.**

224. Hypsipetes psaroides.

Hypsipetes psaroides (Vig.); Hume & Henders. Lahore to Yark. p. 198 (1873); Sharpe, Cat. B. Brit. Mus. vi. p. 36 (1881); Oates, Faun. Brit. Ind., Birds, i. p. 260 (1889).

No. 1. Murree, June 20, 1873.
No. 6. Murree, June 21, 1873.
Nos. 22, 26. Murree, June 24, 1873.
Nos. 76, 78. Murree, July 2, 1873.
No. 148. Urumbu, July 24, 1873.

Colonel Biddulph procured this species in the Jhelum Valley in August 1874. Dr. Henderson says that it was common at Banipál on both sides of the pass leading from Jamu to Srinagar, but was not seen elsewhere.

Genus **MOLPASTES.**

225. Molpastes intermedius.

Pycnonotus intermedius, A. Hay; Sharpe, Cat. B. Brit. Mus. vi. p. 130 (1881).
Molpastes intermedius, Oates, Faun. Brit. Ind., Birds, i. p. 272 (1889).

No. 54. Murree, June 27, 1873.

226. Molpastes leucogenys.

Otocompsa leucogenys (Gray); Hume & Henders. Lahore to Yark. p. 200 (1873); Sharpe, Cat. B. Brit. Mus. vi. p. 160 (1881).
Molpastes leucogenys, Oates, Faun. Brit. Ind., Birds, i. p. 272 (1889).

No. 169. Sopur, July 26, 1873.

Colonel Biddulph states that this species was very common in the Sind Valley and in Kashmir generally, but was seen nowhere else. Dr. Henderson also states that it was common throughout Kashmir.

Family CAMPOPHAGIDÆ.

Genus **PERICROCOTUS.**

227. Pericrocotus brevirostris.

Pericrocotus brevirostris (Vig.); Hume & Henders. Lahore to Yark. p. 184 (1873); Sharpe, Cat. B. Brit. Mus. iv. p. 79 (1879); Wardlaw Ramsay, Ibis, 1880, p. 52; Seully, Ibis, 1881, p. 435; Oates, Faun. Brit. Ind., Birds, i. p. 483 (1889).

Nos. 85, 86, ♂ ad. Changligally, near Murree, July 2, 1873.
No. 87, ♀ ad. Changligally, near Murree, July 3, 1873.
No. 313. Sonámarg, August 10, 1873.

Colonel Biddulph procured a male in the Jhelum Valley. Dr. Henderson says that the species was met with throughout Kashmir, from Jamu to the foot of the Zoji Pass, in May and June.

Family MUSCICAPIDÆ.

Genus **MUSCICAPA.**

228. Muscicapa grisola.

Muscicapa grisola, L.; Severtz. Turkest. Jevotn. p. 67 (1873); Dresser, Ibis, 1876, p. 188; Blanf. East. Persia, ii. p. 143 (1876); Sharpe, Cat. B. Brit. Mus. iv. p. 151 (1879); Seully, Ibis, 1881, p. 437; C. Swinh. Ibis, 1882, p. 104; Severtz. Ibis, 1883, p. 70; Sharpe, Trans. Linn. Soc. (2) Zool. v. p. 69 (1889); Oates, Faun. Brit. Ind., Birds, ii. p. 4 (1890).

Butalis grisola, Hume & Henders. Lahore to Yark. p. 185 (1875); Wardlaw Ramsay, Ibis, 1880, p. 53; Zarudn. Ois. Transeasp. p. 35 (1885).

No. 731. Tanksi, September 17, 1873.

A single specimen of this Flycatcher was obtained by Dr. Henderson on the 22nd of September, "in an absolute desert some 14,000 feet above the sea-level, at the foot of the Suget Pass, Ladák, a few miles south of what may be considered the boundary of Yarkand. The thermometer stood at 23° Fahrenheit when the bird was shot."

Genus **HEMICHELIDON.**

229. Hemichelidon sibirica.

Hemichelidon fuliginosa, Hodgs.; Hume & Henders. Lahore to Yark. p. 184, pl. iv. (1873).

Hemichelidon sibirica, Gm.; Prjev. in Rowley's Orn. Misc. ii. p. 272 (1877); Sharpe, Cat. B. Brit. Mus. iv. p. 120 (1879); Wardlaw Ramsay, Ibis, 1880, p. 53; Bidd. Ibis, 1881, p. 52; Seully, t. e. p. 436.

Nos. 302, 303, 317, 332, 333, 347, 359, adults and young. Sonámarg, August 10–12, 1873.
No. 354, adult. Sonámarg, August 12, 1873.—Bill horny black; feet dark brown; iris brown. Length 4·8 inches, wing 2·93, tail 1·8, tarsus 0·5.

Dr. Henderson and Colonel Biddulph both obtained this species at Sonámarg, and the latter gentleman states that it was very common in Kashmir.

Genus **SIPHIA.**

230. Siphia hyperythra.

Siphia hyperythra, Cab.; Oates, Faun. Brit. Ind., Birds, ii. p. 10 (1890).
Muscicapa hyperythra, Sharpe, Cat. B. Brit. Mus. iv. p. 163 (1879).

Colonel Biddulph obtained two specimens in Kashmir.

Genus **CYORNIS.**

231. Cyornis superciliaris.

Muscicapula superciliaris (Jerd.); Sharpe, Cat. B. Brit. Mus. iv. p. 204 (1879); Wardlaw Ramsay, Ibis, 1880, p. 54.
Cyornis superciliaris, Oates, Faun. Brit. Ind., Birds, ii. p. 17 (1890).

Nos. 45, 50, 55. Murree, June 26, 27, 1873.

Genus **DIGENEA.**

232. Digenea leucomelanura.

Digenea leucomelanura, Hodgs.; Sharpe, Cat. B. Brit. Mus. iv. p. 459, pl. xiii. (1879, fig. pess.).
Cyornis leucomelanurus, Oates, Faun. Brit. Ind., Birds, ii. p. 16 (1890).

No. 331. Sonámarg, August 11, 1873.

Genus **STOPAROLA.**

233. Stoparola melanops.

Eumyias melanops (Vig.); Hume & Henders. Lahore to Yark. p. 186 (1873).
Stoparola melanops, Sharpe, Cat. B. Brit. Mus. iv. p. 438 (1879); Oates, Faun. Brit. Ind., Birds, ii. p. 28 (1890).

No. 84. Changligally, Murree, July 2, 1873.

Dr. Henderson obtained a single specimen in Kashmir.

Genus **ALSEONAX.**

234. Alseonax latirostris.

Alseonax latirostris (Raffl.); Hume & Henders. Lahore to Yark. p. 185, pl. 5 (1873); Sharpe, Cat. B. Brit. Mus. iv. p. 127 (1879); Oates, Faun. Brit. Ind., Birds, ii. p. 35 (1890).

No. 677. S. of Chimray, September 13, 1873.—Bill horny black, yellowish fleshy on basal half of lower mandible; feet black; iris dark brown. Length 5 inches, wing 2·8, tail 1·8, tarsus 0·55.

235. Alseonax ruficaudus.

Cyornis ruficauda, Sw.; Wardlaw Ramsay, Ibis, 1880, p. 53.
Siphia ruficauda (Sw.); Sharpe, Cat. B. Brit. Mus. iv. p. 457 (1879).
Alseonax ruficaudus, Oates, Faun. Brit. Ind., Birds, ii. p. 36 (1890).

No. 136, juv. Guri, July 20, 1873.
No. 157, juv. Baramula, July 25, 1873.

Colonel Biddulph obtained a specimen at Baramula on the 1st of August.

Genus **NILTAVA.**

236. Niltava sundara.

Niltava sundara, Hodgs.; Sharpe, Cat. B. Brit. Mus. iv. p. 463 (1879); Oates, Faun. Brit. Ind., Birds, ii. p. 41 (1890).

Nos. 65, 66, ♂ ♀ ad. Murree, June 30, 1873.
No. 5, ♂ ad. Murree, June 20, 1873.
No. 7, ♂ ad. Murree, June 21, 1873.
No. 52, ♂ ad. Murree, June 26, 1873.
♀ ad. Murree, July 10, 1873.

Genus **TERPSIPHONE.**

237. Terpsiphone paradisi.

Tchitrea paradisi (Linn.); Hume & Henders. Lahore to Yark. p. 184 (1873).
Terpsiphone paradisi, Sharpe, Cat. B. Brit. Mus. iv. p. 346 (1879); Oates, Faun. Brit. Ind., Birds, ii. p. 45 (1890).
Muscipeta paradisi, Wardlaw Ramsay, Ibis, 1880, p. 52; C. Swinh. Ibis, 1882, p. 104.

No number. Chackoti, July 22, 1873.
No. 144. Oori, July 23, 1873.
Nos. 183, 184, 187. Srinagar, July 27, 28, 1873.

Dr. Henderson states that the Paradise Flycatcher was very abundant in Kashmir in May and June wherever there were large shady trees. It was seen at Vernág, and was very plentiful about Srinagar and the Sind Valley as far as Gond. It was never seen after leaving Kashmir.

Family HIRUNDINIDÆ.

Genus **CHELIDON.**

238. Chelidon urbica.

Chelidon urbica (L.); Blanf. East. Persia, ii. p. 216 (1876); Scully, Ibis, 1881, p. 428; Severtz. Ibis, 1883, p. 70; Zarudn. Ois. Transcasp. p. 32 (1885); Sharpe, Cat. B. Brit. Mus. x. p. 87 (1885); Radde, Ornis, iii. p. 490 (1887); Oates, Faun. Brit. Ind., Birds, ii. p. 269 (1890).
Hirundo urbica, Homeyer & Tancré, MT. orn. Ver. Wien, 1883, p. 83.

No. 526, ♀. Snurla, August 24, 1873.—Length 6 inches, wing 4·3; tail, inner tail-feathers 1·75, outer 2·4; tarsus 0·46; expanse 11·75; bill from front 0·25, from gape 0·45; length of foot 0·95. Iris dark brown; bill black; feet fleshy white, covered with white feathers to the end of the toes.
No. 532. Saspúl, on the Indus, August 25, 1873.
No. 592. Leh, August 30, 1873.
No. 921, juv. Sanju, October 29, 1873.

Colonel Biddulph tells us that he shot a specimen at Kargil in Ladák.

Genus **COTILE.**

239. Cotile riparia.

Cotyle riparia (L.); Severtz. Turkest. Jevotn. p. 67 (1873); Dresser, Ibis, 1876, p. 189; Blanf. East. Persia, ii. p. 216 (1876); Prjev. in Rowley's Orn. Misc. ii. p. 162 (1877); C. Swinh. Ibis, 1882, p. 101; Sharpe, Cat. B. Brit. Mus. x. p. 96 (1885); Zarudn. Ois. Transcasp. p. 32 (1885); Scully, J. A. S. Beng. lvi. p. 83 (1887); Oates, Faun. Brit. Ind., Birds, ii. p. 272 (1890).

Hirundo riparia, Homeyer & Tancré, MT. orn. Ver. Wien, 1883, p. 83.

No. 1480. Panjah, April 17, 1874.—Length 5 inches, wing 4, tail 2·15, tarsus 0·4; expanse 10·6; bill from front 0·23, from gape 0·52; length of foot 1. Iris dark brown; bill black; feet dusky brownish, shining; soles ashy.

240. Cotile rupestris.

Cotile rupestris (Scop.); Hume & Henders. Lahore to Yark. p. 177 (1873); Severtz. Turkest. Jevotn. p. 67 (1873); Dresser, Ibis, 1876, p. 189; Blanf. East. Persia, ii. p. 216 (1876); Prjev. in Rowley's Orn. Misc. ii. p. 162 (1877); Wardlaw Ramsay, Ibis, 1880, p. 48; Bidd. Ibis, 1881, p. 47; Scully, ibid. p. 427; Severtz. Ibis, 1883, p. 70; Zarudn. Ois. Transcasp. p. 32 (1885); Sharpe, Cat. B. Brit. Mus. x. p. 109 (1885); Radde, Ornis, iii. p. 490 (1887); Scully, J. A. S. Beng. lvi. p. 83 (1887); Sharpe, Trans. Linn. Soc. (2) Zool. v. p. 77 (1889).

Ptyonoprogne rupestris, Scully, Str. F. iv. p. 131 (1876); Oates, Faun. Brit. Ind., Birds, ii. p. 273 (1890).

Hirundo rupestris, Homeyer & Tancré, MT. orn. Ver. Wien, 1883, p. 83.

No. 478, imm. Shargol, W. Ladák, August 20, 1873.
No. 523, adult. Lamaguru, August 23, 1873.
No. 904, imm. Sanju, October 28, 1873.
Nos. 1656, 1660, adult. Pasrobat, May 13, 1874.

Dr. Stoliczka states that the Rock-Martin was common near Pasrobat, and was apparently going to breed in the neighbourhood.

It was often seen by Dr. Henderson, who states that it was not uncommon near Sanju, and was met with both on going and returning on the banks of the Indus near Leh, and was numerous about Dras.

Dr. Scully gives the following note:—"This Crag-Martin was first observed in Eastern Turkestan in August, between Sanju and Kizil Aghil. After that it was seen every day along the Arpalak stream and the Karakásh river. It flew about hunting over the water and perched on the high rocks near the streams. At Kizil Aghil I was informed by the inhabitants that this bird left them when the leaves fell off the trees, and reappeared again in spring when the trees began to blossom; they said that the nests were placed in the clefts of rocks near the river. The Turki name for this species is '*Tagh Karloghach*'—'Mountain Swallow;' and I need scarcely add that it was never seen in the plains."

Genus **HIRUNDO.**

241. Hirundo rustica.

Hirundo rustica, L.; Hume & Henders. Lahore to Yark. p. 176 (1873); Dresser, Ibis, 1876, p. 188; Blanf. East. Persia, ii. p. 215 (1876); Scully, Str. F. iv. p. 131 (1876); Wardlaw Ramsay, Ibis, 1880, p. 48; Bidd. Ibis, 1881, p. 47; Scully, ibid. p. 427; C. Swinh. Ibis, 1882, p. 100; Homeyer & Tancré, MT. orn. Ver. Wien, 1883, p. 83; Severtz. Ibis, 1883, p. 70; Zarudn. Ois. Transcasp. p. 32 (1885); Sharpe, Cat. B. Brit. Mus. x. p. 128 (1885); Scully, J. A. S. Beng. lvi. p. 83 (1887); Radde, Ornis, iii. p. 487 (1887); Sharpe, Trans. Linn. Soc. (2) Zool. v. p. 77 (1889); Oates, Faun. Brit. Ind., Birds, ii. p. 277 (1890).

Hirundo domestica, Severtz. Turkest. Jevotn. p. 67 (1873).

No. 149. Urumbu, July 24, 1873.

No. 1602. Sarikol, May 9, 1874.

Nos. 1732, 1733, 1734, 1762. Yarkand, May 15–20, 1874.

On the 8th of May Dr. Stoliczka noticed the Common Swallow as very common about Sarikol. At Yarkand it was breeding, and the diary contains the following note:—"*H. rustica* makes here a nest of mud, lined with fine grass, horse-hair, and a few feathers, just as it does at home. It does not appear to begin to lay before the 10th of May, as all the eggs I got were nearly fresh. There were four to five eggs in the nest."

Dr. Henderson says that the Common Swallow was "found in great abundance in Kashmir in June, where it was breeding, and in the plains of Yarkand it was common all the way from Sanju to the city. At Oi-tográk, in August, they were collecting in flocks, and perching in vast numbers on the mulberry-trees, probably preparatory to migration, because on the return of the Expedition to the same locality in September not one was to be seen." Dr. Scully observes:—"The Common Swallow is found in great numbers in the plains of Eastern Turkestan, from Sanju to Káshghar, for six months in the year. The birds arrive about the middle of April, and migrate towards the end of October, not a single bird of this species being ever seen in winter. They breed during May and June; many young birds, just able to fly, being found in the early part of July. The Yarkandis call the bird '*Üi Karloghach*'—'House Swallow,' and say that it always makes a mud nest on the roof of houses, the number of eggs laid being from three to five, and that two broods are raised in the season. Unlike the Swift, this species was frequently seen perching on trees, and settling on the ground and on sand banks."

242. Hirundo nipalensis.

Hirundo nipalensis, Hodgs.; Sharpe, Cat. B. Brit. Mus. x. p. 160 (1885); Oates, Faun. Brit. Ind., Birds, ii. p. 282 (1890); Sharpe & Wyatt, Monogr. Hirund. part xiv. (1890).

No. 74. Murree, July 1, 1873.

Order SCANSORES.

Family INDICATORIDÆ.

Genus **INDICATOR.**

243. Indicator xanthonotus.

Indicator xanthonotus, Blyth; Stoliczka, Str. F. i. p. 529 (1873); Shelley, Cat. B. Brit. Mus. xix. p. 3 (1891).
Indicator radcliffii, Hume, Ibis, 1872, p. 10.
Pseudofringilla xanthonotus, Hume, Str. F. i. p. 314 (1873).
Pseudospiza xanthonota, Sharpe in Rowley's Orn. Misc. i. p. 207 (1876).

No. 89, ♂, adult. Dungagally, July 7, 1873.—Bill yellow, dusky towards the tip; feet pale greenish, soles white; iris dark brown. Length 6 inches, wing 4, tail 2·5, tarsus 9·16.

A full account of the capture of this interesting specimen is given by Dr. Stoliczka in 'Stray Feathers' (*l. c.*), where he gives notes on its anatomy.

Family CAPITONIDÆ.

Genus **MEGALÆMA.**

244. Megalæma marshallorum.

Megalæma marshallorum, Swinh.; Shelley, Cat. B. Brit. Mus. xix. p. 53 (1891).

No. 19. Murree, June 23, 1873.
No. 23. Murree, June 24, 1873.

Family PICIDÆ.

Subfamily *PICINÆ.*

Genus **GECINUS.**

245. Gecinus squamatus.

Gecinus squamatus (Vig.); Bidd. Ibis, 1881, p. 49; Scully, t. c. p. 430; Hargitt, Cat. B. Brit. Mus. xviii. p. 43 (1890).

Nos. 14, 17, 29, ♀. Murree, June 23–24, 1873.

Colonel Biddulph procured a female at Baramula.

246. Gecinus occipitalis.

Gecinus occipitalis (Vig.); Hargitt, Cat. B. Brit. Mus. xviii. p. 56 (1890).

No. 61, ♂. Murree, June 29, 1873.

Genus **HYPOPICUS.**

247. Hypopicus hyperythrus.

Hypopicus hyperythrus (Vig.); Hargitt, Cat. B. Brit. Mus. xviii. p. 199 (1890).

No. 72, ♂. Murree, June 30, 1873.

Genus **DENDROCOPUS.**

248. Dendrocopus leucopterus. (Plates XII., XIII.)

Picus (*Dendrocopus*) *leucopterus*, Salvad. Atti R. Accad. Sci. Torino, vi. p. 129 (1870–71).
Picus leptorhynchus, Severtz. Str. F. 1875, p. 430; id. Ibis, 1875, pp. 487–491; Dresser, Ibis, 1876, p. 320; Menzb. Ibis, 1885, p. 357.
Picus leucopterus, Hume, Str. F. iii. p. 219 (1875); Scully, Str. F. iv. p. 134 (1876).
Dendrocopus leucopterus, Hargitt, Cat. B. Brit. Mus. xviii. p. 215 (1890).

No. 917, ♂. Sanju, November 1, 1873.—Bill black; feet greenish horny black; iris red. Length 9·5 inches, wing 4·85, tail 4·1, tarsus 0·9.
No. 917, ♀. Sanju, October 28, 1873.—Bill black; feet greenish horny black; iris red. Length 9·5 inches, wing 4·85, tail 4·1, tarsus 0·9.
No. 942, ♀. Sanju, October 31, 1873.
No. 1047, ♂. Yarkand, November 23, 1873. Kizil-i-shtán (Kokan).
No. 1307, ♀. Káshghar, February 4, 1873.

During his visit to England, Dr. Severtzoff examined the above-mentioned skins obtained by Dr. Stoliczka, and he named one of them "*Picus leptorhynchus*, Sev., *typicus*," and the other "*Picus leptorhynchus*, Sev., var. *P. leucopterus*, Salvad." Dr. Severtzoff always seems to have regarded his name of *leptorhynchus* as taking priority over Salvadori's name of *leucopterus*, and his assertion called forth a protest from Count Salvadori (Ibis, 1876, p. 386), a reference which seems to have escaped the eye of my friend Mr. Hargitt.

Acting on the advice of Dr. Severtzoff I had figures prepared of the two forms as identified by him, in order to show the difference in the pattern of the wings; but I agree with Mr. Hargitt that only one species is recognizable.

Colonel Biddulph writes:—"*Picus leucopterus* we first saw between Sanju and Yarkand, and it was common everywhere in the plains of Turkestan, especially between Káshghar and Marálbáshi during the winter. I do not remember seeing it after our return in May."

Dr. Scully states that this Woodpecker was seen near Yarkand during the winter only, and then was far from common. In the summer it is said to move up northwards to the forest-region in the neighbourhood of Aksu. The Turki name for this species is "*Sokochak*," *i. e.* the "Striker."

249. Dendrocopus himalayensis.

Picus himalayanus, J. & S.; Hume & Henders. Lahore to Yark. p. 179 (1873).
Picus himalayensis, Wardlaw Ramsay, Ibis, 1880, p. 50; Bidd. Ibis, 1881, p. 48; Scully, t. c. p. 429.
Dendrocopus himalayensis (J. & S.); Hargitt, Cat. B. Brit. Mus. xviii. p. 220 (1890).

Nos. 15, 25, ♂ imm. Murree, June 23, 24, 1873.
No. 88, ♂ imm. Dungagally, July 3, 1873.
No. 102, ♂ imm. Changligally, July 6, 1873.
No. 116, ♀. Murree, July 13, 1873.
No. 151, ♂ imm. Urumbu, July 24, 1873.
No. 340, ♂ imm. Sonámarg, August 11, 1873.

Dr. Henderson found this Woodpecker very common in Kashmir, but, as might be expected, it did not cross the Zoji-là. Colonel Biddulph shot a female at Sonámarg on the 14th of July.

250. Dendrocopus brunneifrons.

Dendrocopus brunneifrons (Vig.); Hargitt, Cat. B. Brit. Mus. xviii. p. 264 (1890).

No. 113. Murree, July 11, 1873.

Subfamily *IYNGINÆ*.

Genus **IYNX.**

251. Iynx torquila.

Iynx torquilla, L.; Severtz. Turkest. Jevotn. p. 68 (1873); Dresser, Ibis, 1876, p. 320; Blanf. East. Persia, ii. p. 136 (1876); Bidd. Ibis, 1881, p. 49; Scully, ibid. p. 430; C. Swinh. Ibis, 1882, p. 103; Severtz. Ibis, 1883, p. 71; Homeyer & Tancré, MT. orn. Ver. Wien, 1883, p. 91; Hargitt, Cat. B. Brit. Mus. xviii. p. 560 (1890).

No. 323, adult. Sonámarg, August 11, 1873.—Bill pale horny brown; feet livid greenish; iris light brown. Length 7·6 inches, wing 3·3, tail 2·8, tarsus 0·75.
No. 781. Chagra, September 21, 1873.

Order UPUPÆ.

Family UPUPIDÆ.

Genus **UPUPA.**

252. Upupa epops.

Upupa epops, L.; Severtz. Turkest. Jevotn. p. 68 (1873); Hume & Henders. Lahore to Yark. p. 182 (1873); Scully, Str. F. iv. p. 136 (1876); Dresser, Ibis, 1876, p. 319; Blanf. East. Persia, ii. p. 130 (1876); Wardlaw Ramsay, Ibis, 1880, p. 52; Bidd. Ibis, 1881, p. 50; Scully, ibid. p. 432; C. Swinh. Ibis, 1882, p. 103; Homeyer & Tancré, MT. orn. Ver. Wien, 1883, p. 83; Severtz. Ibis, 1883, p. 71; Menzbier, Ibis, 1885, p. 357; Zarudn. Ois. Transcasp. p. 47 (1885); Scully, J. A. S. Beng. lvi. p. 80 (1887); Radde, Ornis, iii. p. 491 (1887); Sharpe, Trans. Linn. Soc. (2) Zool. v. pt. 3, p. 84 (1889).

No. 160. Baramula, July 25, 1873. Soikuk.
No. 163. Sopur, July 26, 1873.
No. 1004. Yarkand, November 11, 1873.
No. 1018. Yarkand, November 13, 1873.—"Höpöpöp ; Hodhod."

Dr. Henderson says :—"The Hoopoe was seen almost daily the whole way from Lahore to Yarkand city. In the barest deserts, where the Ravens that travelled with the camp were almost the only living things to be seen, the Hoopoe would occasionally be met with ; and again on the highest passes it was noticed, apparently entirely at its ease. It was seen at Lak Zung, overlooking the Lingzi Thang, and in a former journey I saw it at the very top of the Tugulung Pass (16,000 feet)." According to Dr. Scully the Hoopoe is a very common bird in Kashgharia, where it is a permanent resident. "It was met with," he says, "in all sorts of places ; in the fields about Káshghar and Yarkand, near villages ; at the little oasis in the desert between Khárghalik and Sanju, in the valley of the Karakásh ; and it seemed perfectly happy in the barren region near the Karakorum Pass, an elevation of over 18,000 feet. The Yarkandis call it 'Hüpüp.'"

On the 26th of May Dr. Stoliczka found young birds near Yarkand, the nest being placed in a hole of a poplar.

Order COCCYGES.

Family CUCULIDÆ.

Genus **CUCULUS.**

253. Cuculus canorus.

Cuculus canorus, L. ; Hume & Henders. Lahore to Yark. p. 180 (1873) ; Severtz. Turkest. Jevotn. p. 68 (1873) ; Dresser, Ibis, 1876, p. 320 ; Blanf. East. Persia, ii. p. 119 (1876) ; Scully, Str. F. iv. p. 134 (1876) ; Wardlaw Ramsay, Ibis, 1880, p. 50 ; Bidd. Ibis, 1881, p. 49 ; Scully, ibid. p. 430 ; C. Swinh. Ibis, 1882, p. 103 ; Homeyer & Tancré, MT. orn. Ver. Wien, 1883, p. 91 ; Severtz. Ibis, 1883, p. 71 ; Menzbier, Ibis, 1885, p. 357 ; Zarudn. Ois. Transcasp. p. 48 (1885) ; Radde, Ornis, iii. p. 491 (1887).

Nos. 42, 43. Murree, June 25, 1873.
No. 191. Srinagar, July 28, 1873.—"Vairul."
No. 506. Kharbu, August 22, 1873.—[A young bird in customary dark plumage.]
No. 1718. Yangihissár, April 1874.
Nos. 1752, 1753, 1754, 1765. Yarkand, May 15–20, 1874.—[Adults in grey plumage.]
Nos. 1707, 1779, 1783. Yarkand, May 15–20, 1874.—All three in hepatic plumage.

Dr. Henderson writes :—"The Common Cuckoo was met with on the upward journey in May and June along the whole road from Jamu up to the Banihál Pass, and thence *viâ* Srinagar and the Sind Valley to the Zoji-là, where the last specimen was seen, chanting its 'note of dread to husbands' ears' from a budding birch-tree, close to the snow, and at an elevation of some 11,000 feet." Dr. Scully states that the Common Cuckoo arrives in the plains of Eastern Turkestan about the middle of April, and leaves about the beginning of August. He gives a long account of its breeding habits &c., and says that the Turki name is "*Kakkok*."

Genus **COCCYSTES.**

254. Coccystes jacobinus.

Coccystes jacobinus (Bodd.); Bidd. Ibis, 1881, p. 50.

No. 135. Tinali, July 19, 1873.

Order HALCYONES.

Family ALCEDINIDÆ.

Genus **ALCEDO.**

255. Alcedo bengalensis.

Alcedo bengalensis (Gm.); Hume & Henders. Lahore to Yark. p. 178 (1873); Dresser, Ibis, 1876, p. 320; Homeyer & Tancré, MT. orn. Ver. Wien, 1883, p. 83.
Alcedo ispida, β. bengalensis, Severtz. Turkest. Jevotn. p. 68 (1873).

No number, adult. Sopur, July 26, 1873.
Nos. 203, 228, imm. Srinagar, July 29–31, 1873.
No. 1160, adult. Káshghar, December 17, 1873.—Bill blackish, tinged with fleshy at the base; feet coral-red; iris dark brown. Length 7·1 inches, wing 2·9, tail 1·5, tarsus 0·4.
Nos. 1327, 1329. Káshghar, February 10, 1874.

Dr. Henderson states that the Common Indian Kingfisher was excessively plentiful in Kashmir, but was never observed after crossing the Zoji-là. The native names were "Tint Konu" and "Tuntu."

Genus **CERYLE.**

256. Ceryle varia.

Ceryle rudis (L., pt.); Sharpe, Monogr. Alced. p. 61, pl. 19 (1871); Wardlaw Ramsay, Ibis, 1880, p. 50.

No. 241. Srinagar, August 1, 1873.—"Tindh."

Colonel Biddulph shot a specimen at Baramula, and the species was met with not uncommonly along the Jhelum in Kashmir by Dr. Henderson.

Order CORACIÆ.

Family CYPSELIDÆ.

Genus **CYPSELUS.**

257. Cypselus pekinensis.

Cypselus pekinensis, Swinh.; Scully, Str. F. iv. p. 132 (1876); Scully, Ibis, 1881, p. 428; C. Swinh. Ibis, 1882, p. 101.

No. 298. Sonámarg, August 11, 1873.—Bill black; feet fleshy brown; iris brown. Length 7·4 inches, wing 6·65, tail 3·05, tarsus 0·4.
No. 319. Sonámarg, August 10, 1873 (*Capt. Biddulph*).
No. 430. Tashgam, August 17, 1873.
No. 542. Snimu, August 26, 1873.
Nos. 759, 760. Lukung, September 20, 1873.
No. 798. Kárghalik, November 6, 1873.

Dr. Stoliczka states that he saw this Swift in considerable numbers near Sonámarg on the 10th of August. Dr. Scully observes:—"The Swift was first noticed flying over the fort at Yarkand on the 10th of April; after that it was seen daily near the fort and city until the end of July, when it seemed to have disappeared." He gives an account of its nesting, and says that the Turki name for it is "*Kirich Karloghach*," the "Sabre Swallow."

I have examined the specimens of *Cypselus acuticauda* mentioned by Dr. Scully (*t. c.* p. 132), and believe that they are also referable to *C. pekinensis*.

Family CAPRIMULGIDÆ.

Genus **CAPRIMULGUS.**

258. Caprimulgus ægyptius.

Caprimulgus arenicolor, Severtz. Ibis, 1875, p. 491; Dresser, Ibis, 1876, p. 190; Zarudn. Ois. Transcasp. p. 33 (1885).
Caprimulgus ægyptius, Licht.; Scully, Str. F. iv. p. 133 (1876).

A single specimen was obtained by Dr. Scully in the forest-region of the Dolan, about thirty miles from the city of Yarkand; but it was never met with in the immediate neighbourhood of Káshghar or Yarkand.

Family CORACIIDÆ.

Genus **CORACIAS.**

259. Coracias garrula.

Coracias garrula (L.); Hume & Henders. Lahore to Yark. p. 177 (1873); Severtz. Turkest. Jevotn. p. 68 (1873); Dresser, Ibis, 1876, p. 319; Blanf. East. Persia, ii. p. 125 (1876); Scully, Str. F. iv. p. 133 (1876); Biddulph, Ibis, 1881, p. 48; Scully, ibid. p. 429; C. Swinhoe, Ibis, 1882, p. 102; Homeyer & Tancré, MT. orn. Ver. Wien, 1883, p. 83; Zarudn. Ois. Transcasp. p. 48 (1885); Scully, J. A. S. Beng. lvi. p. 79 (1887); Radde, Ornis, iii. p. 492 (1887); Sharpe, Trans. Linn. Soc. (2) Zool. v. pt. 3, p. 84 (1889).

No. 259. Srinagar, July 5, 1873.
No. 193. Srinagar, July 28, 1873.
No. 265. Srinagar, August 5, 1873.—Nilknósh.
No. 644. Leh, September 6, 1873.

Colonel Biddulph mentions that he shot a female in the Sind Valley on the 20th of July, 1874, but did not notice this species away from Kashmir.

Dr. Henderson says that the European Roller, "so common in Kashmir, especially in

the valleys and along the courses of the rivers, appears to be a rare bird in Yarkand, where, however, it probably breeds, as a young bird was there obtained." Dr. Scully says that this species is said to be common in Khokand and Western Turkestan, where it is called "*Kok Kargha*," the "Blue Crow." It only passes through Eastern Turkestan. The first specimen was obtained at Sulaghz Langar in August, and appeared to be quite unknown to the natives. Later in the same month a second specimen was fonnd dead near the Karakásh River; both birds had evidently been migrating southward.

Family MEROPIDÆ.

Genus **MEROPS.**

260. Merops apiaster.

Merops apiaster (L.); Severtz. Turkest. Jevotn. p. 68 (1873); Blanf. East. Persia, ii. p. 122 (1876); Dresser, Ibis, 1876, p. 319; Wardlaw Ramsay, Ibis, 1880, p. 49; Bidd. Ibis, 1881, p. 48; C. Swinh. Ibis, 1882, p. 102; Zarudn. Ois. Transcasp. p. 49 (1885); Scully, J. A. S. Beng. lvi. p. 79 (1887); Radde, Ornis, iii. p. 492 (1887); Sharpe, Trans. Linn. Soc. (2) Zool. v. pt. 3, p. 84 (1889).

Nos. 214, 215. Sonámarg, July 30, 1873.

Order PSITTACI.

Family PSITTACIDÆ.

Genus **PALÆORNIS.**

261. Palæornis schisticeps.

Palæornis schisticeps, Hodgs. in Gray's Zool. Misc. p. 85 (1844).

Nos. 21, 68. Murree, June 23–30, 1873.
No. 73. Murree, July 1, 1873.
No. 150. Urumbu, July 24, 1873 (*Capt. Biddulph*).—"Tóter."

Order COLUMBÆ.

Family TRERONIDÆ.

Genus **SPHENOCERCUS.**

262. Sphenocercus sphenurus.

Sphenocercus sphenurus (Vig.); Hume & Henders. Lahore to Yark. p. 270 (1873).

No. 71. Murree, June 30, 1873.
No. 80. Murree, July 2, 1873.

Dr. Henderson says that this Fruit-Pigeon was very common near the Chenab between Jamu and Banikál, but was not observed in the valley of Kashmir.

Family COLUMBIDÆ.

Genus **COLUMBA.**

263. Columba œnas.

Columba œnas, L.; Severtz. Turkest. Jevotn. p. 68 (1873); Dresser, Ibis, 1876, p. 221; Scully, Str. F. iv. p. 176 (1876); Blanf. East. Persia, ii. p. 269 (1876); Homeyer & Taneré, MT. orn. Ver. Wien, 1883, p. 91; Sharpe, Trans. Linn. Soc. (2) Zool. v. pt. 3, p. 85 (1889).

Nos. 1053, 1058. Yarkand, November 24th, 1873.

Dr. Scully writes:—"This species was frequently seen in the neighbourhood of Yarkand during the months of May, June, and July, perching on high trees and feeding about on the ground near cultivation. It breeds in Eastern Turkestan, the nest, as I was informed, being usually placed in high poplars (*Populus alba*). The Turki name for the Stock-Pigeon is '*Koshkal*.'"

264. Columba livia.

Columba neglecta, Hume, Lahore to Yark. p. 272 (1873).
Columba livia, Gm.; Severtz. Turkest. Jevotn. p. 68 (1873); Dresser, Ibis, 1876, p. 221; Blanf. East. Persia, ii. p. 268 (1876); C. Swinh. Ibis, 1882, p. 117; Radde, Ornis, iii. p. 492 (1887).

No. 469, ♀ ad. Shargol, August 20, 1873.—Length 13·75, wing 9·0, tail 4·75, tarsus 1·1. Iris reddish orange, golden round the pupil; eyelashes and cere white; bill greenish horny black; feet lead-colour.

Having compared the above specimen with an English-killed one, I cannot see that there is any difference between Mr. Hume's *Columba neglecta* (Lahore to Yark. p. 272) and the ordinary European Rock-Dove.

Colonel Biddulph shot a specimen at Panjah on the 22nd of April, and says that this was the only time he saw the species; they were in small flocks.

265. Columba intermedia.

Columba fusca, Pall.; Severtz. Turkest. Jevotn. p. 68 (1873).
Columba intermedia, Strickl.; Blanf. East. Persia, ii. p. 268 (1876); Dresser, Ibis, 1876, p. 221; Bidd. Ibis, 1881, p. 91.

No. 336. Sonámarg, August 11, 1873 (*Capt. Trotter*).
No. 424. Drás, August 16, 1873.
No. 492. Kharbu, August 21, 1873.—Length 14 inches, wing 9·1, tail 4·8, tarsus 1·14; expanse 28·5; bill from front 0·82, from gape 1·15. Iris reddish orange; bill horny black; feet coral-red.
No. 530. Snurla, August 24, 1873.
No. 685, imm. Chimray, September 13, 1873.
No. 1355. Káshghar, February 14, 1874.—Shot in the fields.

Called "*Ya Kabtar*," because it breeds in the banks of rivers.

266. Columba rupestris.

Columba rupestris, Bp.; Severtz. Turkest. Jevotn. p. 68 (1873); Dresser, Ibis, 1876, p. 221; Prjev. in Rowley's Orn. Misc. ii. p. 379 (1877); Bidd. Ibis, 1881, p. 92; Scully, t. c. p. 584; Homeyer & Tancré, MT. orn. Ver. Wien, 1883, p. 91; Severtz. Ibis, 1883, p. 71.

Columba rupicola, Pall.; Hume & Henders. Lahore to Yark. p. 273 (1873); Scully, Str. F. iv. p. 176 (1876).

No. 616. Leh, September 4th, 1873.

Nos. 689, 690, 691, 692. Above Sakti, 15,000 feet, September 14, 1873.

Nos. 686, 687. Above Sakti, 14,000 feet, September 14, 1873.—Length 13·1–13·2 inches, wing 9·3–9·4, tail 1·0; expanse 27·65–27·8; bill from front 0·55–0·62, from gape 0·92–0·95. Iris golden red; bill black; foot-lobe red, claws horny black.

No. 714. Tanksi, September 17, 1873.

Nos. 743, 744, 746, 747. Lukung, September 19, 1873.

Nos. 1359, 1360, 1361, 1363, 1364. Tangitár, February 18, 1874.

Nos. 1421, 1422. Pasrobat, March 26, 1874.

"This Pigeon," writes Colonel Biddulph, "was very common after leaving Leh, and specially so at the head of the Pangong Lake. Then we saw them occasionally all down the valley of the Karakásh, and also on the return between Kugiár and the Yangi Dewán Pass. I did not notice it on the Pámir." The species is noted in Dr. Stoliczka's 'Diary' as being very common near Lukung.

Dr. Scully writes:—"This Pigeon was common in the hills on the south side of Eastern Turkestan, during the months of August and September, at elevations of from 8000 to 16,000 feet. The birds seemed to be very fond of rocky cliffs, and usually flew about in small flocks or parties. The Turki name for this species is '*Yáwá Kabtar*' (Wild Pigeon)."

267. Columba leuconota.

Columba leuconota, Vig.; Hume & Henders. Lahore to Yark. p. 274 (1873); Prjev. in Rowley's Orn. Misc. ii. p. 380 (1877); Bidd. Ibis, 1881, p. 92; Scully, t. c. p. 584.

Tashgam, Drás Valley, August 17, 1873.

A single specimen was obtained by Dr. Henderson in June near Drás, where it was very abundant.

268. Columba eversmanni.

Palumbœna eversmanni, Bp.; Hume & Henders. Lahore to Yark. p. 271, pl. xxxi. (1873); Scully, Str. F. iv. p. 175 (1876).

Columba fusca, Pall.; Severtz. Turkest. Jevotn. p. 68 (1873).

Columba intermedia, Strickl.; Dresser, Ibis, 1876, p. 221; Bidd. Ibis, 1881, p. 91; C. Swinh. Ibis, 1882, p. 117; Homeyer & Tancré, MT. orn. Ver. Wien, 1883, p. 91.

Columba eversmanni, Scully, J. A. S. Beng. lvi. p. 86 (1887); Sharpe, Trans. Linn. Soc. (2) Zool. v. pt. 3, p. 84 (1889).

Dr. Scully writes:—"This Pigeon was first obtained in a large clump of poplars (*Populus balsamifera*) at Taskhama in June. There they were in great numbers, but so wild that it was difficult to get specimens; I shot two young birds, however, so that there can be no doubt about this species breeding in Eastern Turkestan. In August, again, at Yak Shamba Bazar, I shot a couple of these birds in a clump of poplars and saw many about. The Yarkandis

say that this species always haunts Toghrak (poplar) jungles, and that the nest is always placed on those trees. The Turki name for this Pigeon is '*Kügan*.' *P. eversmanni* is probably only a seasonal visitant to Kashgharia, migrating in winter." Dr. Henderson procured a single specimen at Chagra, above the Pangong Lake, at an elevation of 16,000 feet, on the 8th of October.

Genus **TURTUR**.

269. Turtur stoliczkæ. (Plate XIV.)

Turtur stoliczkæ, Hume; Scully, Str. F. iv. p. 178 (1876).
Turtur chinensis, Severtz. Turkest. Jevotn. p. 68 (1873).
Turtur intercedens, Dresser, Ibis, 1876, p. 221.

No. 949. Sanju, November 1, 1873.—Native name "*Pachtak*."
No. 1309, ♂. Káshghar, February 5, 1874.

Adult male (type of species). General colour above light drab-brown, the sides of the back washed with pale pearly grey; wing-coverts pale pearly grey, shaded with brown, the inner, median, and greater coverts being drab-brown like the back; bastard-wing entirely pearly grey; primary-coverts pearly grey, brown on the inner webs; quills dusky brown, the primaries grey at the base and edged with whitish, the inner primaries for the most part grey, with a dusky-brown shade towards the ends of the feathers, which are fringed with white and are ashy whitish along the shaft, the secondaries entirely pearly grey, except the innermost, which are drab-brown like the back; upper tail-coverts pale drab-brown, the long ones ash-grey, brownish at the ends; centre tail-feathers drab-brown, shaded with ashy grey, the next ones grey, shaded with brown externally and white at the end of the inner web, the bases dusky blackish; the white gradually increasing towards the outer feathers, which are white for nearly the terminal half, with a pronounced blackish shade near the base of the inner web; crown of head light pinkish isabelline, with a black collar round the hind neck, the feathers of the nape and lateral black feathers of the collar fringed with pearly grey; lores, sides of face, ear-coverts, cheeks, and under surface of body pinkish isabelline, throat whiter; breast and abdomen, sides of body, flanks, and thighs pale pearly grey, darker ashy on the under tail-coverts, the long coverts being edged with white at the tip; under wing-coverts and axillaries white, shaded with pearly grey; quills below dusky ashy, white on the inner webs. Total length 12·5 inches, culmen from feathers 0·55, wing 7·4, tail 5·7, tarsus 0·8.

This is a large form of *Turtur risorius* which seems to me worthy of recognition as a race.

Dr. Scully gives the following note:—"This Dove is one of the commonest birds in the plains of Eastern Turkestan; it is at least three times more numerous than *Turtur auritus* (when the latter is in the country), and is a permanent resident throughout the year. It is always to be found near villages and houses, perching on trees or running about on the ground and picking up grain and seeds. The birds are very tame, and in winter they would come right up to the door of my room at Yarkand to be fed. A regular colony of these Doves lives about the compound of the Residency at Yarkand, so I could have easily secured any number of specimens had I known that the bird was supposed to be a new species. A favourite trick of the Yarkand boys is to capture one of these Doves and smear its feathers all over with soot mixed with oil. The bird is then allowed to fly away, and after a few days, when the feathers

have shaken into their ordinary positions, the Ringdove presents quite a natural appearance; only, as it moves about with its fellows, it looks truly a dove in mourning. The Turki name for this Dove is '*Pakhtak*,' i. e. *Fakhtah*, a Dove (Persian)."

Dr. Stoliczka found this Dove at Yarkand on the 24th of May. He writes:—"I took the nest on a pollard willow about seven feet above the ground. The nest is made of a few twigs outside and has a thick lining of cotton-wool inside. It is large and shallow; eggs two, white."

270. Turtur auritus.

Turtur auritus (L.); Hume & Henders. Lahore to Yark. p. 278 (1873); Blanf. East. Persia, ii. p. 270 (1876); Scully, Str. F. iv. p. 177 (1876); Bidd. Ibis, 1881, p. 92; Scully, ibid. p. 585; C. Swinh. Ibis, 1882, p. 117; Severtz. Ibis, 1883, p. 71; Homeyer & Tancré, MT. orn. Ver. Wien, 1883, p. 91; Zarudn. Ois. Transcasp. p. 61 (1885); Scully, J. A. S. Beng. lvi. p. 86 (1887); Sharpe, Trans. Linn. Soc. (2) Zool. v. pt. 3, p. 84 (1889).
Columba turtur (L.); Severtz. Turkest. Jevotn. p. 68 (1873).
Turtur vulgaris, Eyton; Dresser, Ibis, 1876, p. 221.
Peristera turtur, Radde, Ornis, iii. p. 494 (1887).

No. 1048, juv. Káshghar, December 23, 1873.

No. 1151. Káshghar, December 16, 1873.—Length 11·7 inches, wing 7, tail 4·5, tarsus 0·8; expanse 19·5; bill from front 0·7, from gape 0·85; length of foot 1·9. Iris orange-golden, very narrow; bill blackish; feet carmine-red; naked space round the eye violet-red. Near houses and in low jungle.

No. 1755. Yarkand, May 15–20, 1874.

No. 1776. Yarkand, May 23, 1874.—Length 11·7 inches, wing 7·1, tail 4·75, tarsus 1; expanse 20·5; bill from front 0·75, from gape 0·9; length of foot 1·9, spread 1·75. Iris reddish golden, very narrow; bill horny black; feet deep lilac-red. Wings reach within 2 inches of end of tail. "Torolgha" (*Yarkand*); "Urrhak" (*Andijani*).

Nos. 1817, 1824. Kárghalik, May 30, 1874.

Dr. Henderson says:—"A single specimen of the European Turtle-Dove was obtained at Oi-tográk on the 28th of August. Doves were comparatively rare in Yarkand, and this was the only species observed. The specimen above referred to was a female, and corresponds with European specimens with which Mr. Hume compared it."

Dr. Scully's note is as follows:—"The Turtle-Dove is a seasonal visitant to the plains of Eastern Turkestan, arriving in May and migrating towards the end of September or the beginning of October; it was never observed in winter. The Turki name for the Turtle-Dove is '*Turulghu*,' evidently a sort of imitation of the bird's coo."

Dr. Stoliczka found it breeding near Yarkand on the 23rd of May. He fancied that the species had a shorter and deeper call than the European Turtle-Dove. It made a thin nest of a few twigs just like that of the latter bird, and had two white eggs.

271. Turtur senegalensis.

Columba ægyptiaca, Severtz. Turkest. Jevotn. p. 68 (1873).
Turtur senegalensis, Dresser, Ibis, 1876, p. 222; Blanf. East. Persia, ii. p. 270 (1876).

No. 126. Rhara, Jhelum Valley, July 17, 1873.

No. 1886. Chakmak, January 7, 1884.

272. Turtur suratensis.

Turtur suratensis (Gm.); Bidd. Ibis, 1881, p. 92; Scully, ibid. p. 585; Oates' ed. Hume, Nests & Eggs Ind. B. ii. p. 353 (1890).

No. 100. Changligally, Murree, July 6, 1873.
No. 137. Ghari, July 7, 1873.—"Trílpút."
No. 671. Leh, September 10, 1873.

273. Turtur pulchratus.

Turtur vitticollis, Hodgs.; Hume & Henders. Lahore to Yark. p. 274 (1873).

Nos. 446, 447. Chiliscambo, August 18, 1873.
No. 1683. South of Ighiz Yar, May 18, 1874.
No. 1746. Yarkand, May 15–20, 1874.

Colonel Biddulph shot this species at Drás and Sonámarg in July 1874.

Order PTEROCLETES.

Family PTEROCLIDÆ.

Genus **SYRRHAPTES.**

274. Syrrhaptes tibetanus.

Syrrhaptes tibetanus, Gould; Hume & Henders. Lahore to Yark. p. 279 (1873); Prjev. in Rowley's Orn. Misc. ii. p. 384 (1877); Severtz. Ibis, 1883, p. 71.

No. 772. Chagra, September 9, 1873.
Nos. 797, 798, 799. Gogra, September 25, 1873.

The following note has been sent by Colonel Biddulph:—"I first saw this Sand-Grouse at Chagra, at an elevation of 15,000 feet, where it was common and tame. It was flying about in flocks of from three to ten individuals, on the hillside above the camp. In getting into the Changchenmo Valley again, at an elevation of about 15,000 feet, I saw a few, but did not again notice any Sand-Grouse during our journey, except that I saw some flying overhead in November, between Khushtágh and Oi-tográk (4000 feet); and until the day we left Yangihissár, on March the 21st, and crossed a sandy plain (4000 feet) towards Ighiz Yar, I failed to secure a specimen of that species. This may have been *S. paradoxus*."

It is probably to this species, and not to *Pterocles arenarius*, that the following note of Dr. Scully's refers:—"While I was at Yarkand, I often heard of a bird called by the natives '*Beghitak*,' which was said to inhabit sandy desert ground, and often gravelly steppes. It was described as somewhat smaller than a Chicore, of a yellowish-brown colour, like the back of a Turtle-Dove, and having the legs feathered and the three toes partially joined together. The '*Beghitak*' was said to breed in the country, and its blood was reputed a specific for consumption. On the 5th August I first saw this bird near Besharik in open desert ground: two birds rose a long way off before I saw them on the ground, and, as it was after sunset, the only points I learnt about them were that they were very wild, had long pointed wings, a powerful flight, and made a clacking noise like *tuk*, *tuk*, *tuk*, frequently repeated.

"Next day I saw three of these birds in waste ground, where a few stunted bushes were growing; they appeared to be yellowish brown above, the breast dove-colour, abdomen dark or black, lower tail-coverts white. Another of these birds was seen on a subsequent occasion in the desert, but this Sand-Grouse (as I believe it to be) was always so wild and wary, that I could not manage to get within shot of it."

275. Syrrhaptes paradoxus.

Syrrhaptes paradoxus, Pall.; Severtz. Turkest. Jevotn. p. 68 (1873); Dresser, Ibis, 1876, p. 322; Prjev. in Rowley's Orn. Misc. ii. p. 382 (1877); Homeyer & Tancré, MT. orn. Ver. Wien, 1883, p. 91; Zarudn. Ois. Transeasp. p. 62 (1885).

No. 1699. East of Kizil, May 19, 1874.

A female bird, which Mr. Ogilvie Grant thinks to be not quite mature.

This may be the species seen by Dr. Scully near Besharik in August, which is called "*Beghitak*," as has been suggested by Mr. Hume in a footnote to 'Stray Feathers,' vol. iv. p. 139.

Order GALLINÆ.

Family PHASIANIDÆ.

Genus **PHASIANUS.**

276. Phasianus shawi.

Phasianus shawi, Elliot; Scully, Str. F. iv. p. 179 (1876).

Nos. 948, 949, ♂ ♀. Gúma, November 3, 1873.
No. 1071, ♂. Yarkand, November 24, 1873.
No. 1198, ♂. Marálbáshi, January 1874. Sent by the King.

Colonel Biddulph writes to us:—"This species frequents thick grass-jungle, and, according to the natives, never roosts in trees, and I certainly saw it in places where there was no tree to roost in. We first met with it ourselves at a place about 15 miles east of Yarkand. We did not notice it anywhere *en route* to Yarkand, but at Oi-tográk specimens (in the flesh) were brought in, said to have been killed near Gúma, which is on the road to Khoten. On the first march out of Yarkand to Káshghar we again shot specimens; after that we found it on the road from Káshghar to Marálbáshi, at about 60 miles from the former place, and thence on to Marálbáshi. A few were in the jungle, but only where there were nullahs of long grass. At Marálbáshi, where there is a vast expanse of grass, it was very common. They were, however, very wild and shy, and ran like fiends, only rising at considerable distances as a rule, and as, besides this, it was almost impossible to retrieve them in the grass, unless killed dead, I do not think I shot and bagged more than three in any one day; but we used to hawk them with what the people called 'Katchgais,' a Goshawk, I think.

"As far as I could make out it occurs as far north, at any rate, as Aksu, generally all over the nearly level, grass-jungle-clad basins of the Khotan, Yarkand, and Káshghar Rivers, east of the road from Sanju to Káshghar. West of this we never met with it."

Dr. Scully observes:—"This fine Pheasant is a permanent resident in the plains of Eastern Turkestan, frequenting long grass-jungle and reeds growing in waste ground. It is said to occur most plentifully in the Dolan jungle, Makit and Marálbáshi being mentioned as places where it is particularly numerous. However, it is common enough near Káshghar and Yarkand; I know of two rather good places for this Pheasant, one between Yarkand and Kokrabát, and another near Beshkant. The flight of this bird is rather slow, and it commonly goes over the long grass only for a short distance and then drops down. When alarmed the male bird utters a harsh, shrill cry."

Family TETRAONIDÆ.

Genus **CACCABIS.**

277. Caccabis chukor.

Caccabis pallescens, Hume, Lahore to Yark. p. 283 (1873); Scully, Str. F. iv. p. 182 (1876).
Caccabis chukor, Blanf. East. Persia, ii. p. 275 (1876); Prjev. in Rowley's Orn. Misc. ii. p. 425 (1877); Hume & Marshall, Game Birds India, ii. p. 33, pl. v. fig. 1 (1879); Wardlaw Ramsay, Ibis, 1880, p. 70; Bidd. Ibis, 1881, p. 93; Scully, ibid. p. 586; C. Swinhoe, Ibis, 1882, p. 119; Sharpe, Trans. Linn. Soc. (2) Zool. v. pt. 3, p. 87 (1889).
Perdix chukar, Homeyer & Tancré, MT. orn. Ver. Wien, 1883, p. 91; Zarudn. Ois. Transcasp. p. 64 (1885).

No. 92. Dungagally, July 4, 1873.
No. 275. Kangan, August 7, 1873.
No. 1586. Jungalik, April 27, 1874.

This is, to my mind, merely a slightly paler race of the ordinary Himalayan Chukor. Mr. Hume hardly claims for it more than this distinction, but I cannot see that it deserves even a specific name. The type of *C. pallescens* was procured by Dr. Henderson at Kharbu in Ladák.

Although one might have expected the Jungalik bird to have been *C. pallescens*, it cannot be so placed. In fact it is intermediate, being darker than *C. pallescens*, but not so dark as *C. chukor*. My colleague, Mr. Ogilvie Grant, who has studied these Partridges, tells me that he believes that there is a perfect gradation in depth of colour between the two above-named races.

278. Caccabis pallidus.

Caccabis pallidus, Hume, Lahore to Yark. p. 284 (1873); Scully, Str. F. iv. p. 183 (1876).

Nos. 487, 488, pull. Shargol, August 21, 1873 (Afzul Khan).
No. 519. Lamaguru, August 23, 1873.
No. 630. Leh, September 4, 1873.
No. 881. Kiwaz, October 26, 1874 (*Col. Gordon*).
No. 1183. Chakmak, January 3, 1874.
No. 1185. Chakmak, January 4, 1874.
No. 1420. Chehil Gombaz, March 25, 1874.
Nos. 1851, 1852. S. Kugiár, June 2, 1874.

Mr. Hume first described this species, but afterwards, in the 'Game Birds of India, he came to the conclusion that it was not separable from *C. chukor*, the Trans-Himalayan range of which he gives as "spread throughout the northern ranges, the so-called Karakorum or Kuen-luen, and right across Káshghar to the Tian Shan, throughout which it occurs." On reviewing the series procured by Dr. Stoliczka, however, the uniformly pale tint of the Central-Asian birds is very recognizable, and I think that it should be kept separate. Mr. Ogilvie Grant tells me that he believes that a complete gradation in colour will be found to exist between the Himalayan and the Yarkand Partridges, and he is inclined to regard the two birds as climatic forms of the same species.

Colonel Biddulph sends us the following note:—"I shot one in some jungle between Káshghar and Marálbáshi, and there were some also in the latter place, but they are not very common in the Plains country. In all the Hills, however, south and west of Turkestan, up to, at any rate, 12,000 feet, they are very common. In the valley between Panjah and Sarhad in Wakhán they are specially abundant, and people hawk them."

Dr. Henderson states that in Yarkand this Partridge swarms (wherever the rivers debouch into the plains) over a belt of country some ten or fifteen miles in width. He gives an account of their mode of capture.

"Chicore appear to abound," says Dr. Scully, "in all the hills which surround the plains of Kashgharia on the north, west, and south. In the winter the birds seem to come down to lower elevations than they frequent in summer. The Turki name for the Chicore is '*Keklik*.'"

Ten eggs of this species, out of one nest, were brought to Dr. Stoliczka at Beshterek on the 31st of May.

Genus **COTURNIX.**

79. Coturnix coturnix.

Coturnix communis, Bonn.; Hume & Henders. Lahore to Yark. p. 285 (1873); Scully, Str. F. iv. p. 184 (1876); Blanf. East. Persia, ii. p. 278 (1876); Dresser, Ibis, 1876, p. 323; Prjev. in Rowley's Orn. Misc. ii. p. 424 (1877); Bidd. Ibis, 1881, p. 92; Scully, ibid. p. 586; Homeyer & Tancré, MT. orn. Ver. Wien, 1883, p. 92; Scully, J. A. S. Beng. lvi. p. 87 (1887).

Coturnix vulgaris, Severtz. Turkest. Jevotn. p. 68 (1873).

Ortygion coturnix, Radde, Ornis, iii. p. 495 (1887).

No. 1271, ♂. Káshghar, January 25, 1874.—Bill dull pale bluish; feet pale yellow, claws violet; iris hazel-brown. Length 8·0 inches, wing 4·5, tail 1·9, tarsus 1·2.

No. 1323. Káshghar, February 9, 1874.

Colonel Biddulph writes:—"We shot this Quail in the plains of Turkestan in November and January, and I heard them calling in May and June. We were told that at that season they were very abundant there." Dr. Henderson procured a specimen on the 24th of September at the Karatágh Lake (13,500 feet).

Dr. Scully says:—"The Quail seems to be a permanent resident in the plains of Kashgharia; I got two birds at Yarkand in February, and the Shikaris were positive that the bird was to be met with throughout the winter. In summer the birds were common in the fields about Yarkand, though not very numerous. The Turki name for this species is '*Budinah*,' but the common people generally call it '*Watwalak*.'"

Dr. Stoliczka writes in his 'Diary':—"Kugiár, June 1st. *C. communis* is certainly rare in summer and goes probably further north, returning here in autumn or at least passing through. It is said to be very common in Andiján during the summer. I heard only a single Quail calling when coming out of Kárghalik yesterday morning."

Genus **TETRAOGALLUS.**

280. Tetraogallus tibetanus.

Tetraogallus tibetanus, Gould; Hume & Henders. Lahore to Yark. p. 281 (1873); Scully, Str. F. iv. p. 182 (1876); Prjev. in Rowley's Orn. Misc. ii. p. 427 (1877).

Colonel Biddulph procured a female specimen in the Sakti Pass on the 15th of September. He says:—"This is the only occasion on which I shot a specimen of this species. Crossing the Lankar Pass (Marsemik) a few days later, I saw others, probably of this species." Dr. Stoliczka says that it was common in the Kaskasu Pass on the 26th of March.

Dr. Scully writes:—"I shot my first specimen of this species on the 24th September 1874 near the top of the Sanju Pass, at an elevation of 16,000 feet. Next day I saw hundreds of the birds in a side valley near Kichik Yailak, where they afforded me good shooting. They associated in coveys of about ten to twenty, and were not very shy. When approached from below they moved leisurely up hill, stopping every now and then to look at one; but when shot at or alarmed they flew downwards very swiftly, uttering a pleasant musical whistle. I found their flesh most delicious eating. Numbers of these birds were brought to us alive, during the winter, at Káshghar (where a specimen was preserved) and at Yarkand; they were very tame in confinement. Both this species and the preceding one had evidently sought the lower hills near the plains when winter set in. The Turki name for the bird is '*Ular*,' and they are said to be found in all the hills which bound Eastern Turkestan on the north, west, and south."

281. Tetraogallus himalayensis. (Plate XV.)

Tetraogallus himalayensis (Gray); Hume & Henders. Lahore to Yark. p. 280 (1873); Scully, Str. F. iv. p. 181 (1876); Bidd. Ibis, 1881, p. 93; Scully, ibid. p. 586; Severtz. Ibis, 1883, p. 72; Scully, J. A. S. Beng. lvi. p. 86 (1887).

No. 843. Sháhidúla, November 21, 1873 (*Mr. Forsyth*).

In his 'Diary' Dr. Stoliczka writes:—"Sasstekke, May 16. Hyder Mahomed got five Ular eggs for me. The bird makes its nest of grass &c. high up between rocks."

The specimen preserved by Dr. Stoliczka is much paler than any of the Himalayan birds in the National Collection, and it may ultimately be found desirable to separate the Central Asian bird as a subspecies or race.

Order PLATALEÆ.

Family IBIDIDÆ.

Genus **PLEGADIS.**

282. Plegadis falcinellus.

Ibis falcinellus (L.); Severtz. Turkest. Jevotn. p. 68 (1873); Dresser, Ibis, 1876, p. 326; Blanf. East. Persia, ii. p. 298 (1876).
Falcinellus igneus, C. Swinh. Ibis, 1882, p. 123.
Plegadis falcinellus, Oates in Hume's Nests and Eggs Ind. B. iii. p. 231 (1890).

No. 1531. Panjah, April 14–23, 1874.

Order HERODIONES.

Family ARDEIDÆ.

Genus **ARDEA.**

283. Ardea cinerea.

Ardea cinerea, L.; Hume & Henders. Lahore to Yark. p. 295 (1873); Dresser, Ibis, 1876, p. 325; Scully, Str. F. iv. p. 196 (1876); Prjev. in Rowley's Orn. Misc. iii. p. 48 (1878); Bidd. Ibis, 1881, p. 99; Scully, ibid. p. 591; C. Swinh. Ibis, 1882, p. 123; Severtz. Ibis, 1883, p. 72; Zarudn. Ois. Transcasp. p. 71 (1885); Radde, Ornis, iii. p. 497 (1887).
Ardea cinerea, var. *brag*, Isid. Geoffr.; Severtz. Turkest. Jevotn. p. 68 (1873).

No. 177. Wular Lake, Kashmir, July 26, 1873.—"Brag."

Colonel Biddulph procured a specimen at Baramula. He writes to us:—"I saw this species between Sanju and Yarkand and in the swamps round the latter place." Dr. Stoliczka found it breeding on a jheel near Yarkand on the 22nd of May.

Dr. Henderson says that this species was very common about Srinagar, where there is a large heronry.

"Four specimens of this species," writes Dr. Scully, "were preserved at Yarkand in January and February. This Heron was common about Káshghar and Yarkand during the whole winter, frequenting swampy ground and the neighbourhood of unfrozen bits of water. It was not seen near Yarkand from April to August; but in the latter month numbers of these birds were met with at Tungtash near Kárghalik, among reeds growing near water. Again, on the 26th of August a flock of these birds (? migrating) was seen near the Karakásh River below Gulgun Shah. The Yarkandis say that this bird is a permanent resident in the country, moving northwards in summer to the country about Marálbáshi, where it breeds, and that it feeds chiefly on frogs and fish. The Turki name for the species is '*Ukar*' or ''*Ukar*.'"

Genus **HERODIAS.**

284. Herodias alba.

Ardea alba, L.; Severtz. Turkest. Jevotn. p. 68 (1873); Dresser, Ibis, 1876, p. 325; Blanf. East. Persia, ii. p. 295 (1876); Prjev. in Rowley's Orn. Misc. iii. p. 49 (1878); C. Swinh. Ibis, 1882, p. 123.
Herodias alba, Scully, Str. F. iv. p. 196 (1876).

No. 1275. Káshghar, January 21, 1874.—Orbital skin green; feet dark brown.

Dr. Scully observes :—" In winter this species was more common about Káshghar (where four birds were shot) and Yarkand than *Ardea cinerea*. It was never seen in spring or summer, having then, it was reported, migrated northwards, towards Aksu, to breed. It frequented marshy places and the banks of small streams, feeding on fish. The Turki name for this species (which Mr. Hume informs me is the large European form and not the Lesser White Heron of India) is '*Ak Ukar*,' 'White Heron.'"

Genus **ARDETTA.**

285. Ardetta minuta.

Ardetta minuta (L.); Hume & Henders. Lahore to Yark. p. 296 (1873); Severtz. Turkest. Jevotn. p. 68 (1873); Dresser, Ibis, 1876, p. 326; Blanf. East. Persia, ii. p. 296 (1876); Bidd. Ibis, 1881, p. 99; Scully, t. c. p. 592; Severtz. Ibis, 1883, p. 72.
Ardeola minuta, Zarudn. Ois. Transcasp. p. 71 (1885).

Nos. 186, 190, 192, 196, 197, ad. Srinagar, July 28, 1873.
No. 205, ad. Srinagar, July 29, 1873.
Nos. 212, 251, ad. Srinagar, August 3, 1873.—Length 16·5 inches, wing 5·9, tail 1·9, tarsus 1·65; expanse 20·0. Iris bright orange, with a yellow ring round the pupil; bill brownish above, yellowish green at the sides; sides of face and eyelids green; feet green, the soles yellow. Kashmir name "*Goi*."
No. 996, young. Yarkand, November 11, 1873.

Colonel Biddulph says :—" I only saw it at Srinagar, but never noticed it in Yarkand." Dr. Henderson says that it was excessively common in the lakes and marshes of Kashmir, where it was breeding in June.

Genus **NYCTICORAX.**

286. Nycticorax griseus.

Nycticorax griseus (L.); Hume & Henders. Lahore to Yark. p. 296 (1873); Bidd. Ibis, 1881, p. 99; Scully, t. c. p. 592.
Nyctiardea nycticorax, Oates in Hume's Nests & Eggs Ind. B. iii. p. 258 (1890).

According to Dr. Henderson, common in the lower valley of Kashmir.

Genus **BOTAURUS.**

287. Botaurus stellaris.

Botaurus stellaris (L.); Severtz. Turkest. Jevotn. p. 68 (1873); Dresser, Ibis, 1876, p. 325; Scully, Str. F. iv. p. 196 (1876); Blanf. East. Persia, ii. p. 297 (1876); Prjev. in Rowley's Orn. Misc. iii. p. 50 (1878); C. Swinh. Ibis, 1882, p. 123; Sharpe, Trans. Linn. Soc. (2) Zool. v. pt. 3, p. 90 (1889).

No. 1176. Káshghar, December 23, 1873.—"Koelbuka." Bought by Dr. Bellew in the bazaar.

Dr. Scully's note is as follows:—"Four specimens of the Bittern were preserved: a female at Káshghar in December, a male at Beshkant in February, and two males at Yarkand in the same month. This species was tolerably common near Káshghar and Yarkand during the winter, frequenting swampy ground covered with rushes. It was not noticed in spring or summer; but Mr. Shaw purchased a young bird of the year about the middle of July, which would seem to prove that this bird does not breed far from Yarkand, at any rate. I kept several of these birds in confinement, and found that their favourite attitude was with the beak directed straight up in the air, the eyes looking very vacant, and the whole body kept still and unmoved; when made to walk about the room they would shake out their neck-feathers and look very fierce. The natives said that one required to be very careful in handling these birds, as they were very fond of making a peck straight at one's eye: a wild hare kept in the same room with a Bittern died one night, and next morning one of its eyes was found very neatly picked out; my servant looked on this incident as a striking confirmation of the eye-extracting tendencies of the bird. The Yarkandis call this species '*Kul bughasi*,' the 'Stag of the Lake,' and say that it is a permanent resident in the country, breeds in long grass-jungle, and makes a very loud booming noise *by sticking its bill into a reed!*"

Family CICONIIDÆ.

Genus **DISSURA.**

288. Dissura episcopus.

Melanopelargus episcopus (Bodd.); Hume & Henders. Lahore to Yark. p. 294 (1873).
Dissura episcopus, Oates in Hume's Nests & Eggs Ind. B. iii. p. 268 (1890).

Dr. Henderson states that he saw this Stork in the plains of Yarkand on several occasions, especially in the neighbourhood of Yarkand itself. No specimen was preserved, and none of the other expeditions met with the species.

Order STEGANOPODES.

Family PHALACROCORACIDÆ.

Genus **PHALACROCORAX.**

289. Phalacrocorax carbo.

Carbo phalacrocorax, var. *continentalis,* Severtz. Turkest. Jevotn. p. 114 (1873).
Graculus carbo, L.; Scully, Str. F. iv. p. 204 (1876); Prjev. in Rowley's Orn. Misc. iii. p. 146 (1878).
Phalacrocorax carbo (L.); Blanf. East. Persia, ii. p. 298 (1876); Dresser, Ibis, 1876, p. 415; Scully, Ibis, 1881, p. 594; Severtz. Ibis, 1883, p. 77; Zarudn. Ois. Transcasp. p. 72 (1885); Scully, J. A. S. Beng. lvi. p. 88 (1887).

Dr. Scully writes as follows:—"This Cormorant is, I believe, a permanent resident in Kashgharia—in the plains. The first specimen was obtained on the banks of the Yarkand River, near Tarim Langar. In the beginning of August I found these birds quite common at Tungtash, near Kárghalik. They were then nearly always seen in parties of five, sitting on the top of a mud cliff—often thirty feet high—immediately overlooking the water below, one of the party acting as sentinel. The favourite posts of the Cormorants could be easily recognized about the place—spots worn into a sort of dome shape by their tails, and always near the edge of the cliff. In sitting these birds rest on their feet and the stiff feathers of their tails, the tail being spead out to form a sort of hollow half-cone. When they fly the neck is stretched forward like a goose. On one occasion I saw a Cormorant sitting near the water's edge, apparently watching intently for a fish; I shot the bird just as it rose, and it immediately dived into the water, reappearing again, however in a few seconds as it was mortally wounded. The Turki name for this Cormorant is '*Kara Ghaz,*' 'the Black Goose.'"

Order ANSERES.

Family ANATIDÆ.

Subfamily *ANSERINÆ.*

Genus **CYGNUS.**

290. Cygnus olor.

Cygnus olor, Gm.; Severtz. Turkest. Jevotn. p. 70 (1873); Dresser, Ibis, 1876, p. 416; Scully, Str. F. iv. p. 197 (1876); Prjev. in Rowley's Orn. Misc. iii. p. 99 (1878).

"The Swan," writes Dr. Scully, "was often mentioned to me as being plentiful in Lob and towards Aksu; captive individuals of this species were seen at Káshghar in November, swimming in a pond at the Shrine of Hazrat Apak. The Turki name for the species is '*Koday.*'"

Genus **ANSER.**

291. Anser albifrons.

Anser albifrons, Bechst.; Severtz. Turkest. Jevotn. p. 70 (1873); Dresser, Ibis, 1876, p. 418; Blanf. East. Persia, ii. p. 303 (1876); Hume & Marsh. Game Birds Ind. iii. p. 73.

Nos. 1319, 1320. Káshghar, February 1874. "Sent by the King."

292. Anser cinereus.

Anser cinereus, Meyer; Severtz. Turkest. Jevotn. p. 70 (1873); Dresser, Ibis, 1876, p. 418; Scully, Str. F. iv. p. 197 (1876); Prjev. in Rowley's Orn. Misc. iii. p. 95 (1878); Zarudn. Ois. Transcasp. p. 72 (1885).

Colonel Biddulph writes to us :—"There was a large swamp outside Yarkand, in which, when we arrived in November, there were huge flocks of this species; but I never saw it anywhere else, and they were not about Káshghar anywhere during the winter."

Dr. Scully has published the following note :—"The Grey Lag Goose is a seasonal visitant to Kashgharia, where it breeds. The first specimen of this species which I got was shot near Yarkand on the 28th February; in the early part of March they were often seen flying over the Fort at Yarkand and going straight north. The bird is said to breed plentifully near Marálbáshi, but not in the immediate vicinity of Yarkand; young birds were captured about the beginning of June. Two eggs of *Anser cinereus* (laid by a captive bird with cut wings) were obtained on the 1st and 12th of June. They are spotless white, with an ivory tinge; glossless or faintly glossy in parts, and of a compact texture. In shape they are moderately long ovals, broadest about the centre, and measure 3·37 by 2·33 and 3·21 by 2·21. It was curious to observe how readily birds of this species got tame; even old birds, who had only had their wings broken by a bullet, soon became quite friendly and familiar. The Turks call this Goose by the Persian name '*Ghaz.*'"

293. Anser indicus.

Anser indicus (Lath.); Dresser, Ibis, 1876, p. 419; Prjev. in Rowley's Orn. Misc. iii. p. 97 (1878); Bidd. Ibis, 1881, p. 99; Hume & Marsh. Game Birds Ind. iii. p. 81 (1880); Severtz. Ibis, 1883, p. 76.

Anser skorniakovi, Severtz. Turkest. Jevotn. pp. 70, 149 (1873).

No. 1594. Aktásh, May 5, 1874.

Colonel Biddulph says :—"I saw this on the small Pámir Lakes on our way back in May, and also all along the Aktásh stream in the same month, but cannot remember observing them anywhere else on the journey."

Subfamily *ANATINÆ.*

Genus **TADORNA.**

294. Tadorna casarca.

Casarca rutila (Pall.); Hume & Henders. Lahore to Yark. p. 296 (1873); Blanf. East. Persia, ii. p. 303 (1876); Scully, Str. F. iv. p. 198 (1876); Prjev. in Rowley's Orn. Misc. iii. p. 100 (1878); Hume

& Marsh. Game Birds of India, iii. p. 123 (1880); Bidd. Ibis, 1881, p. 99; C. Swinh. Ibis, 1882, p. 124; Scully, J. A. S. Beng. lvi. p. 89 (1887); Sharpe, Trans. Linn. Soc. (2) Zool. v. p. 91 (1889).

Anas rutila, Severtz. Turkest. Jevotn. p. 70 (1873).

Tadorna rutila, Dresser, Ibis, 1876, p. 419.

Tadorna casarca (L.); Severtz. Ibis, 1883, p. 76; Oates in Hume's Nests and Eggs, iii. p. 286 (1890).

Dr. Henderson writes :—"The Brahminy Duck or Ruddy Sheldrake was first noticed at the hot springs above Gokra, at an elevation of 16,000 feet; there they were seen on the small lakes at the salt plain, and all along the Karakásh River. The young were at that time (July) scarcely able to fly; when approached, the mother made them all dive by swimming and flapping on to each of them as soon as it showed itself above the water. The mother also pretended to be wounded, and lay on the water every now and then, with wings spread out as if unable to fly. All along the Karakásh Valley, and also on the high table-land wherever there was water overhung by cliffs, there numbers of Brahminy Ducks with broods of young ones were seen, and holes in these cliffs plastered over with droppings were pointed out by the Kirghiz as the places in which they had bred. The local name is 'ngooroo ngaugpa.'"

Dr. Scully gives the following note :—"The Ruddy Sheldrake was observed in the plains of Kashgharia in the beginning of winter, and from March to August it was exceedingly plentiful in the lakes and swamps of Sughuchak, near Yarkand. Many young birds were unable to fly, usually swimming about with the old female bird. In July I saw a party of about ten of these Ducks among some rushes; they had a sentinel bird placed at some little distance from the main flock, and on seeing me approach he gave a sort of warning cry which seemed to put his party on the alert; when I got a few steps nearer the watcher gave a loud scream and flew up, followed by the rest of the party. This bird seems to walk very easily on dry land, and always in a curiously erect manner. The Yarkandis say that this species migrates to India in winter, and that the eggs are laid in some dry place away from water; as soon as the young bird emerges from the egg, the mother seizes it and puts it into the water. The Turki name for the Brahminy Duck is '*Hangghut*,' pronounced 'Hangat.'"

Colonel Biddulph noticed one of these Sheldrakes going into a hole in precipitous cliffs about a hundred feet above the Sarikol plain on the 11th of May, and believes that the species was breeding there.

Genus **BRANTA.**

295. Branta rufina.

Branta rufina (Pall.); Scully, Str. F. iv. p. 201 (1876); Bidd. Ibis, 1881, p. 100; Hume & Marsh. Game-Birds of India, iii. p. 253, pl. 34; Sharpe, Trans. Linn. Soc. (2) Zool. v. p. 90 (1889).

Fuligula rufina, Severtz. Turkest. Jevotn. p. 70 (1873); Dresser, Ibis, 1876, p, 421; Blanf. East. Persia, ii. p. 301 (1876); C. Swinh. Ibis, 1882, p. 125.

Met with by Dr. Scully, who says that it was not observed in winter, but was very common near Yarkand during the summer. It is only a seasonal visitant to Kashgharia, where it breeds. The Turki name is "*Kizil bash aurdak*," *i. e.* the "Red-headed Duck."

Genus **CLANGULA.**

296. Clangula glaucion.

Clangula glaucion, Severtz. Turkest. Jevotn. p. 70 (1873); Dresser, Ibis, 1876, p. 421; Blanf. East. Persia, ii. p. 302 (1876); Hume & Marsh. Game Birds of India, iii. p. 285, pl. 38 (1880); Scully, J. A. S. Beng. lvi. p. 89 (1887); Sharpe, Trans. Linn. Soc. (2) Zool. v. p. 91 (1889).

Bucephalus clangula, Prjev. in Rowley's Orn. Misc. iii. p. 106 (1878).

No. 1318, ♀. Káshghar, February 1874. (Sent by the King.)

Nos. *1591, 1592, ♂. Lake Sirikul, Pámir, May 1, 1874.—*Sex, male. Length 18·7 inches, wing 9·35, tail 4, tarsus 1·65; expanse 32; bill from front 1·3, from gape 2·1. Iris yellow; bill greenish black; feet reddish yellow, soles silky brown. Middle toe 2·9, hind toe 0·8.

Genus **ANAS.**

297. Anas boscas.

Anas boschas, L.; Severtz. Turkest. Jevotn. p. 70 (1873); Dresser, Ibis, 1876, p. 419; Blanf. East. Persia, ii. p. 300 (1876); Scully, Str. F. iv. p. 199 (1876); Prjev. in Rowley's Orn. Misc. iii. p. 101 (1878); C. Swinh. Ibis, 1882, p. 124; Zarudn. Ois. Transcasp. p. 72 (1885).

Anas boscas, Bidd. Ibis, 1881, p. 99; Scully, t. c. p. 592.

No. 1169, ♂. Káshghar, December 20, 1873. (*Captain Trotter.*)

Nos. 1199, 1200, ♂ ♀. Káshghar, January 1874. (Sent by the King.)

"The Mallard," writes Dr. Scully, "occurs in great numbers in Kashgharia during the whole winter, when it is decidedly the commonest of the Duck tribe. In spring and summer it seemed to be less plentiful; but this may perhaps have been because it was cast in the shade by the great variety of other Ducks and Teal then breeding about Yarkand. The Yarkandis say that of the twenty odd species of Duck which they discriminate, the Mallard is the only permanent resident in the vicinity of Káshghar and Yarkand, breeding in April. The Turki name of the Mallard is '*Aurdak*,' which means simply 'Duck,' and it is sometimes distinguished as '*Sun*' or *Suna aurdak.*'"

Dr. Stoliczka found this species breeding in the jheel near Yarkand on the 24th of May.

Genus **QUERQUEDULA.**

298. Querquedula crecca.

Anas crecca, Severtz. Turkest. Jevotn. p. 70 (1873); Dresser, Ibis, 1876, p. 419; Scully, Ibis, 1881 p. 593; Severtz. Ibis, 1883, p. 76; Scully, J. A. S. Beng. lvi. p. 88 (1887).

Querquedula crecca, Hume & Henders. Lahore to Yark. p. 297 (1873); Dresser, Ibis, 1876, p. 419; Blanf. East. Persia, ii. p. 301 (1876); Scully, Str. F. iv. p. 200 (1876); Prjev. in Rowley's Orn. Misc. iii. p. 104 (1878); Hume & Marshall, Game Birds of India, iii. p. 205, pl. 27 (1880); Bidd. Ibis, 1881, p. 100; C. Swinh. Ibis, 1882, p. 124; Sharpe, Trans. Linn. Soc. (2) Zool. v. p. 91 (1889).

No. 827, ♀. Sháhidúla, October 19, 1873.

No. 1532, ♀. Panjah, April 14–23, 1874.

"The Common Teal," writes Dr. Henderson, "was never seen either on the way to or in Yarkand; the first specimen was met with on the return journey, near the hot springs at

Gokra, at an elevation of between 15,000 and 16,000 feet. Later, in October, they were seen on the Indus, near Leh, and at Kargil, also in Ladák. Probably this species does not breed so far south as Yarkand, and the birds seen on the return journey were doubtless migrating to their winter-quarters in Hindostan."

Dr. Scully's note is as follows:—" The Common Teal was only obtained at Káshghar in November, at Sughuchak near Yarkand, by Mr. Shaw, in January, and at Beshkant in the beginning of February. I was told that it migrated northwards to breed. The Turki name given for this species was '*Ala bash kurak aurdak*,' which means the 'Mottle-headed Patchwork Duck.' "

299. Querquedula circia.

Anas querquedula, Severtz. Turkest. Jevotn. p. 70 (1873).
Querquedula circia, Dresser, Ibis, 1876, p. 419; Blanf. East. Persia, ii. p. 301 (1876); Scully, Str. F. iv. p. 201 (1876); Prjev. in Rowley's Orn. Misc. iii. p. 103 (1878); Bidd. Ibis, 1881, p. 100; C. Swinh. Ibis, 1882, p. 125; Severtz. Ibis, 1883, p. 76; Menzb. Ibis, 1885, p. 358.
Anas circia, Scully, Ibis, 1881, p. 593.

No. 652, ♀. Leh, September 9, 1873.
No. 794, ♀. Pamsal, September 23, 1873.
No. 1526, ♂. Panjah, April 14–23, 1874.

Colonel Biddulph shot a male in breeding-plumage on the 8th of May, 1874, and he says that this was the only occasion on which he observed the species. Dr. Scully states that this Teal was common near Yarkand, in summer, where it doubtless breeds. The Turki name given to it is " *Karak aurdak*," or " Patchwork Duck."

Genus **DAFILA**.

300. Dafila acuta.

Anas acuta, Severtz. Turkest. Jevotn. p. 70 (1873); Scully, Ibis, 1881, p. 593.
Dafila acuta (L.); Scully, Str. F. iv. p. 200 (1876); Blanf. East. Persia, ii. p. 301 (1876); Dresser, Ibis, 1876, p. 420; Prjev. in Rowley's Orn. Misc. iii. p. 101 (1878); Bidd. Ibis, 1881, p. 100.

Dr. Scully's note is as follows:—" The Pintail Duck was occasionally seen near Yarkand in March, but only one specimen (a female) was obtained. Two experienced Yarkandi bird-catchers gave me the following information about this species:—The male bird is '*ala*,' *i. e.* pied, black and white; it is a seasonal visitant only to Eastern Turkestan, arriving in spring, and migrating to Hindostan at the beginning of winter, and it breeds in the neighbourhood of Marálbáshi, laying from ten to twelve eggs. It is called in Turki '*Cha sughsu aurdak*.' "

Genus **CHAULELASMUS**.

301. Chaulelasmus streperus.

Chaulelasmus streperus (L.); Hume & Henders. Lahore to Yark. p. 296 (1873); Dresser, Ibis, 1876, p. 419; Prjev. in Rowley's Orn. Misc. iii. p. 105 (1878); Hume & Marsh. Game Birds of India, iii. p. 181, pl. 24 (1880); Sharpe, Trans. Linn. Soc. (2) Zool. v. p. 91 (1889).
Anas strepera, Severtz. Turkest. Jevotn. p. 70 (1873); Blanf. East. Persia, ii. p. 301 (1876); C. Swinh. Ibis, 1882, p. 124; Menzb. Ibis, 1885, p. 357; Scully, J. A. S. Beng. lvi. p. 88 (1887).

Two Gadwalls were killed by Dr. Henderson on the 31st of October at Gánderbal in Kashmir, and many others were seen at the same time. They were not previously noticed.

Genus **SPATULA.**

302. Spatula clypeata.

Anas clypeata, Severtz. Turkest. Jevotn. p. 70 (1873); id. Ibis, 1883, p. 76.
Spatula clypeata, Dresser, Ibis, 1876, p. 240; Blanf. East. Persia, ii. p. 301 (1876); Scully, Str. F. iv. p. 199 (1876); Prjev. in Rowley's Orn. Misc. iii. p. 105 (1878); Bidd. Ibis, 1881, p. 99; Scully, ibid. p. 592; Hume & Marsh. Game Birds of India, iii. p. 142, pl. 19 (1880); C. Swinh. Ibis, 1882, p. 124; Zarudn. Ois. Transcasp. p. 72 (1885); Sharpe, Trans. Linn. Soc. (2) Zool. v. p. 91 (1889).

No. 1171, ♀. Káshghar, December 20, 1873.
No. 1174, ♀. Káshghar, December 22, 1873.
No. 1448, ♂. Tashkúrghán, March 31, 1874.
No. 1530. Panjah, April 14–23, 1874.

Dr. Scully writes: — "Two specimens of the Shoveller, a female and a male, were preserved at Káshghar in November and December. According to Yarkandi accounts very few of these birds remain in the country during the winter, the vast majority of them migrating to India. They breed during the summer in the north of Kashgharia, about the neighbourhood of Marálbáshi, and are said to collect for a short time near Yarkand, when the cold sets in, previous to their migration southwards. The Turki name for the species is given as '*Kanak aurdak.*'"

Genus **FULIGULA.**

303. Fuligula ferina.

Fuligula ferina, Severtz. Turkest. Jevotn. p. 70 (1873); Dresser, Ibis, 1876, p. 420; Blanf. East. Persia, ii. p. 302 (1876).
Aythya ferina, Prjev. in Rowley's Orn. Misc. iii. p. 106 (1878).

No. 1442, ♀. Tashkúrghán, March 31, 1874.

Genus **NYROCA.**

304. Nyroca ferruginea.

Fuligula leucophthalma, Severtz. Turkest. Jevotn. p. 70 (1873).
Nyroca ferruginea, Dresser, Ibis, 1876, p. 421.
Fuligula nyroca, Blanf. East. Persia, ii. p. 302 (1876); Scully, Ibis, 1881, p. 593; Severtz, Ibis, 1883, p. 77; Menzbier, Ibis, 1885, p. 358; Scully, J. A. S. Beng. lvi. p. 89 (1887).
Aythya nyroca (Güld.); Hume & Henders. Lahore to Yark. p. 297 (1873); Scully, Str. F. iv. p. 202 (1876).

Dr. Scully says:—"This species is very common during the summer near Yarkand, where it arrives about March, migrating again southwards at the beginning of winter. It breeds in Eastern Turkestan, laying in May or June, and is often seen flying about in pairs. The Turki name for this Duck is '*Chiki* (*or Chikit*) *kanat aurdak,*' the word '*Chikit*' having some reference to the white speculum edged with black."

Observed by Dr. Henderson in Kashmir (on the lakes in which it breeds) both on the upward and downward journey.

Subfamily *MERGINÆ*.

Genus **MERGUS.**

305. Mergus merganser.

Mergus merganser, Scvertz. Turkest. Jcvotn. p. 70 (1873); Dresser, Ibis, 1876, p. 421; Prjev. in Rowley's Orn. Misc. iii. p. 107 (1878).

Mergus castor, Hume & Henders. Lahore to Yark. p. 297 (1873); Scully, Str. F. iv. p. 202 (1876); Bidd. Ibis, 1881, p. 101.

No. 721, ♀ ad. Tanksi, September 16, 1873.

No. 831, ♂ juv. Upper Karakásh, October 1873.

No. 1590, ♂ ad. Lake Sirikul, May 1, 1874.—Length 25 inches, wing 11·8, tail 5·2, tarsus 2; expanse 38; bill from gape 2·8, from front 2; middle toe 2·9, hind toe 0·75. Iris dark brown; bill black, red at upper sides and base; feet coral-red.

In his 'Diary' Dr. Stoliczka refers to the occurrence of the present species in the Pámir, where he saw a good number in Lake Sirikul. It is probably one of the species said to breed round the lake.

A young, half-fledged Merganser was caught in the Indus near Leh, in July, by Dr. Henderson on his up journey.

Colonel Biddulph shot a female specimen at Cuchot on the Indus River in September 1872, and states that he saw the bird at Tashkúrghán in Sarikol, where one of the feeders of the Yarkand River broadens out into a wide shallow.

Dr. Scully writes:—"A specimen of this Merganser was preserved at Káshghar on the 30th of October, and it was tolerably common on the rivers near Káshghar during the months of November and December. The natives said that it fed entirely on fish and water-insects, and that it migrated eastward to the lake region of Lob. Its Turki name is '*Ala ghaz aurdak*,' *i. e.* the Variegated Goose-Duck."

Genus **MERGELLUS.**

306. Mergellus albellus.

Mergus albellus, Scvertz. Turkest. Jevotn. p. 70 (1873); Dresser, Ibis, 1876, p. 421; Blanf. East. Persia, ii. p. 303 (1876); Prjcv. in Rowley's Orn. Misc. iii. p. 108 (1878); Severtz. Ibis, 1883, p. 76; Scully, J. A. S. Beng. lvi. p. 89 (1887).

Mergellus albellus, Scully, Str. F. iv. p. 202 (1876); Hume & Marsh. Game Birds of India, iii. p. 293, pl. 39 (1880); C. Swinh. Ibis, 1882, p. 125; Sharpe, Trans. Linn. Soc. (2) Zool. v. p. 92 (1889).

No. 1177, ♀. Káshghar, December 24, 1873.

Stated in Dr. Stoliczka's diary to have been caught with a Hawk. Dr. Scully writes:—"The Smew was occasionally seen near Yarkand in the winter, but only one specimen, a female, was obtained in February, near the Yarkand River, which was then completely frozen over."

Order GAVIÆ.

Family LARIDÆ.

Genus **LARUS.**

307. Larus ichthyaetus.

Gavia ichthyaetus (Pall.), Severtz. Turkest. Jevotn. p. 70 (1873).
Larus ichthyaetus, Dresser, Ibis, 1876, p. 415; Blanf. East. Persia, ii. p. 292 (1876); Saunders, P. Z. S. 1878, p. 198; Prjev. in Rowley's Orn. Misc. iii. p. 109 (1878).

No. 1175. Káshghar, December 23, 1873. "Sent as a present from the King."
No. 1529. Panjah, April 14, 1874.

Both are immature specimens, attaining the adult grey plumage.

308. Larus brunneicephalus.

Xema brunneicephala (Jerd.), Hume & Henders. Lahore to Yark. p. 300, pl. 32 (1873); Scully, Str. F. iv. p. 203 (1876).
Larus brunneicephalus, Severtz. Ibis, 1883, p. 77.
Chroicocephalus brunneicephalus, Prjev. in Rowley's Orn. Misc. iii. p. 109 (1878).

Dr. Henderson says that this Gull was very abundant in July, at an elevation of about 15,000 feet, in a small stream running down from Chagra into the Pangong Lake. When the Expedition returned in October the majority had disappeared.

Dr. Scully writes:—"A few birds of this species were observed at Káshghar in winter (November and December) fishing over the streams and ponds; and again in January near Sughlak. The Turki name of this Gull is "*Ghorki*.'"

309. Larus ridibundus.

Xema ridibunda (L.); Hume & Henders. Lahore to Yark. p. 301 (1873).
Larus ridibundus, Blanf. East. Persia, ii. p. 292 (1876); Dresser, Ibis, 1876, p. 415; Scully, Ibis, 1881, p. 594; id. J. A. S. Beng. lvi. p. 88 (1887).
Gavia ridibunda, Severtz. Turkest. Jevotn. p. 70 (1873).

Dr. Henderson says that thousands of this species were fishing in the Wular Lake, Kashmir, in November 1870.

310. Larus argentatus.

Larus argentatus, Severtz. Turkest. Jevotn. p. 70 (1873); Hume & Henders. Lahore to Yark. p. 299 (1873); Blanf. East. Persia, ii. p. 290 (1876).
Larus leucophæus, Dresser, Ibis, 1876, p. 415.

Dr. Henderson obtained two specimens early in November in the Wular Lake, Kashmir.

Genus **STERNA.**

311. Sterna tibetana.

Sterna fluviatilis, Hume & Henders. Lahore to Yark. p. 303 (1873); Scully, Str. F. iv. p. 203 (1876).
Sterna tibetana, Saunders, P. Z. S. 1876, p. 649.
? *Sterna hirundo,* Severtz. Ibis, 1883, p. 77.

Nos. 1704, 1785, 1787. Yarkand, May 21–25, 1874.—Iris red.

In his 'Diary' Dr. Stoliczka mentions his finding this Tern breeding in a jheel near Yarkand in May.

Dr. Henderson found the species very abundant in August in Yarkand, and he also met with it at Lukung near the Pangong Lake, in which neighbourhood it also probably breeds.

Dr. Scully writes:—"This Tern arrives in the plains of Eastern Turkestan in April, and migrates about September; it breeds in June. This species was exceedingly numerous about Yarkand, fishing over pools, marshes, rice-fields, and inundated fields; its principal food seems to consist of a small fish which occurs very plentifully in Kashgharia, called "*Tini balik.*' This bird has a harsh shrill cry, and is called in Turki '*Balakchi,*' the 'Fisher.'"

312. Sterna minuta.

Sternula minuta (L.); Hume & Henders. Lahore to Yark. p. 303 (1873); Severtz. Turkest. Jevotn. p. 70 (1873); Blanf. East. Persia, ii. p. 294 (1876); Scully, Str. F. iv. p. 204 (1876); Dresser, Ibis, 1876, p. 416.
Sterna minuta, Scully, J. A. S. Beng. lvi. p. 88 (1887).

Common in Yarkand, according to Dr. Henderson.

"This Tern," says Dr. Scully, "was frequently observed throughout the months of June and July in the neighbourhood of Yarkand. It associated with *Sterna tibetana*, but was very much less numerous than that species. It is a seasonal visitant only to Eastern Turkestan, arriving about May and leaving certainly before the beginning of October. It breeds in Kashgharia, where it is known by the name of '*Balakchi,*' the 'Fisher.'"

Genus **HYDROCHELIDON.**

313. Hydrochelidon hybrida.

Hydrochelidon indica, Hume & Henders. Lahore to Yark. p. 301 (1873); Prjev. in Rowley's Orn. Misc. iii. p. 145 (1878).
Hydrochelidon leucopareius, Severtz. Turkest. Jevotn. p. 70 (1873).
Hydrochelidon hybrida, Dresser, Ibis, 1876, p. 416; Saunders, P. Z. S. 1876, p. 640; Blanf. East. Persia, ii. p. 294 (1876); Bidd. Ibis, 1881, p. 102; Scully, t. c. p. 594.

Nos. 180, 181. Wular Lake, near Srinagar, July 26, 1873.
Nos. 208, 211. Srinagar, July 29, 1873.

Dr. Stoliczka's 'Diary' contains a note on the 26th of July, on the breeding of this Tern on the Wular Lake, where he found nests with one or two eggs. "Sometimes it is said to lay three; but men assured me there are already many young, and this is perhaps a case of late breeding."

Dr. Henderson states that this species was very common in Kashmir in June, breeding close to Srinagar.

Order LIMICOLÆ.

Family PARRIDÆ.

Genus **HYDROPHASIANUS.**

314. Hydrophasianus chirurgus.

Hydrophasianus sinensis (Gm.); Hume & Henders. Lahore to Yark. p. 290 (1873).

Nos. 171–174, 176. Wular Lake, Kashmir, July 26, 1873.

No. 252, ♂. Srinagar, August 3, 1873.—Length 21 inches, wing 9·4, tail 10·45, tarsus 2; expanse 28. Iris dark brown; beak bluish; feet pale bluish, with a slight green tinge, claws horny.

Dr. Stoliczka records in his 'Diary' that on the 26th of August he shot a number of this species, and found the eggs. The nest is only a few water-reeds put together at the surface of the water, and the thing can scarcely be called a nest. There were three eggs. Dr. Henderson states that it was very abundant near Banihál.

Family CHARADRIIDÆ.

Genus **CHARADRIUS.**

315. Charadrius fulvus.

Charadrius longipes, Temm.; Hume & Henders. Lahore to Yark. p. 284 (1873); Prjev. in Rowley's Orn. Misc. ii. p. 434 (1877); Bidd. Ibis, 1881, p. 94; Scully, t. c. p. 586.

Not a single specimen of the Asiatic Golden Plover is in the collection, but Dr. Henderson found it very abundant in the vicinity of Yarkand in August, when the specimens still retained some of the breeding-plumage.

Genus **SQUATAROLA.**

316. Squatarola helvetica.

Squatarola helvetica (Gm.); Scully, Str. F. iv. p. 184 (1876); Blanf. East. Persia, ii. p. 278 (1876); Dresser, Ibis, 1876, p. 327.

Charadrius squatarola, Severtz. Turkest. Jevotn. p. 69 (1873).

Dr. Scully says:—"Two specimens of the Grey Plover were shot near running water between the Fort and City of Káshghar in November. It was never noticed in the country at any other time, and I have no information about it. In common with several other Plovers it is called in Turki '*Chullok*.'"

Genus ÆGIALITIS.

317. Ægialitis cantianus.

Ægialophilus cantianus, Scully, Str. F. iv. p. 185 (1876).
Ægialitis cantianus, Severtz. Turkest. Jevotn. p. 69 (1873); Blanf. East. Persia, ii. p. 279 (1876); Dresser, Ibis, 1876, p. 328; Prjev. in Rowley's Orn. Misc. ii. p. 435 (1877); Bidd. Ibis, 1881, p. 94.

No. 1810. Kárghalik, May 29, 1874.

Dr. Scully's note is as follows:—"The Kentish Ring-Plover is a seasonal visitant to the plains of Eastern Turkestan, arriving about the end of March, and disappearing entirely in winter. It frequents stony ground and efflorescent wastes, always in the neighbourhood of shallow pools of water. When disturbed it appears to take only short flights, but runs very nimbly over the ground. The Turki name given to this species is '*Chullok*;' it is also sometimes called '*Sai Yamghurchi*,'—Yamghurchi being the exact Turki equivalent of '*pluvialis*,' and Sai meaning a stony steppe."

318. Ægialitis dubia.

Ægialitis dubia (Scop.); Sharpe, Trans. Linn. Soc. (2) Zool. v. pt. 3, p. 89 (1889).
Ægialitis minor, Severtz. Turkest. Jevotn. p. 69 (1873).
Ægialitis fluviatilis, Scully, Str. F. iv. p. 185 (1876); Blanf. East. Persia, ii. p. 279 (1876).
Ægialitis philippensis, Bidd. Ibis, 1881, p. 94.
Ægialitis curonica (Gm.); Dresser, Ibis, 1876, p. 328; Prjev. in Rowley's Orn. Misc. ii. p. 435 (1877); Scully, Ibis, 1881, p. 587; id. J. A. S. Beng. lvi. p. 87 (1887).

No. 1709. Yarkand, May 22, 1874.

Dr. Scully writes:—"This species, like the last, is, I believe, only a seasonal visitant to the plains; however, I cannot quite make out how the young bird I got at Káshghar in December came to be there at that time. This Plover arrives towards the end of March, and migrates about September. It was common in the neighbourhood of Yarkand in summer, and was found in the Karakásh Valley at an elevation of about 12,000 feet towards the end of August. It was usually seen in small flocks, feeding on insects in the vicinity of swampy ground. The bird breeds in May, laying, I was informed, three or four eggs on the bare ground at some distance from water. This species is called by the Yarkandis '*Shaiarak Chullok*.'"

319. Ægialitis mongolicus.

Ægialitis mongolicus (Pall.); Hume & Henders. Lahore to Yark. p. 285 (1873); Blanf. East. Persia, ii. p. 279 (1876).
Eudromias mongolicus, Severtz. Turkest. Jevotn. p. 69 (1873); Dresser, Ibis, 1876, p. 327.

No. 1609, ♀. Sarikol, May 9, 1874.—Length 7·9 inches, wing 5·32, tail 2·2, tarsus 1·35. Iris brown; bill black; feet ashy black, more silvery ashy on the tarsi than on the toes. Ovary contained one large and several smaller eggs. Would have laid in about a week.

No. 1610, ♂.—Length 7·6 inches, wing 5·15, tail 2·1, tarsus 1·35. Not common; passing through.

Nos. 1603, 1648, 1651. Sarikol, May 9 and 10, 1874.

Dr. Stoliczka states in his 'Diary' that this species was not uncommon at Sarikol, and apparently bred in the neighbourhood. Colonel Biddulph states that he met with this species at Tashkúrghán on the 8th of May. Dr. Henderson writes:—"This species was first met with on the 19th of July at the hot springs above Gokra, at an elevation of 16,000 feet. A few were seen on the Salt Plain on the 29th of July, and after that the birds were found in pairs all along the Karakásh River. They were not very numerous, but a certain number of pairs were met with each day. Not a single bird was seen on the return journey in September and the early part of October. Gokra was reached on the 5th of that month, so that ere this the young birds must have been sufficiently advanced to leave along with the parents for our distant Indian coasts."

Genus **VANELLUS.**

320. Vanellus cristatus.

Vanellus cristatus (Meyer); Severtz. Turkest. Jevotn. p. 69 (1873); Hume & Henders. Lahore to Yark. p. 286 (1873); Scully, Str. F. iv. p. 186 (1876); Blanf. East. Persia, ii. p. 280 (1876); Prjev. in Rowley's Orn. Misc. ii. p. 433 (1877); Zarudn. Ois. Transcasp. p. 68 (1885); Seully, J. A. S. Beng. lvi. p. 87 (1887); Sharpe, Trans. Linn. Soc. (2) Zool. v. pt. 3, p. 88 (1889).

Vanellus vulgaris, Bechst.; Dresser, Ibis, 1876, p. 328; Bidd. Ibis, 1881, p. 94; Scully, ibid. p. 587.

Nos. 994, 1042. Yarkand, November 10–27, 1873.
Nos. 1129, 1130. Káshghar, December 10, 1873.
No. 1223. Káshghar, January 22, 1874.
No. 1778. Yarkand, May 24, 1874.

Colonel Biddulph writes:—"Not very common. I shot single birds at Sanju and Káshghar, and saw others, but never in flocks, whilst travelling about the plains country. I did not notice them in the hills."

Dr. Henderson obtained specimens in the plains between Kárghalik and the city of Yarkand. He says that they seemed to be very abundant in all marshy places throughout the plains of Yarkand.

"The Lapwing," writes Dr. Scully, "was exceedingly common in the plains from March to December, but was not observed in January or February. It frequented marshy ground and the vicinity of streams, generally in flocks. It breeds in April and May; and I noticed in the beginning of June that these birds often circled round and round over one piece of grass, uttering their plaintive cry and evidently solicitous about their young. The Turki name for the Peewit is '*Cheman*' (*i. e.* 'Chaman,' Persian, 'walking haughtily')."

Near Yarkand Dr. Stoliczka found the Lapwing breeding, and procured young birds on the 27th of May, which were fully a week old.

Genus **CHETTUSIA.**

321. Chettusia gregaria.

Vanellus gregarius, Pall.; Severtz. Turkest. Jevotn. p. 69 (1873).

Chettusia gregaria, Dresser, Ibis, 1876, p. 328; Bidd. Ibis, 1881, p. 95; Scully, t. c. p. 587; Zarudn. Ois. Transcasp. p. 68 (1885).

No. 1457. Panjah, April 13, 1874.

"Saw four of them."

Genus **LOBIVANELLUS.**

322. Lobivanellus indicus.

Lobivanellus indicus (Bodd.); Blanf. East. Persia, ii. p. 281 (1876); Bidd. Ibis, 1881, p. 95.

Nos. 239, 242. Srinagar, August 1, 1873.

Family GLAREOLIDÆ.

Genus **GLAREOLA.**

323. Glareola pratincola.

Glareola pratincola (L.); Severtz. Turkest. Jevotn. p. 69 (1873); Dresser, Ibis, 1876, p. 328; Blanf. East. Persia, ii. p. 282 (1876).

No number. Sarikol, May 9, 1874.—Bill black, coral-red at lower and lateral base and angle; feet ashy brown; iris brown. Length 10·1 inches, wing 7·6, tail 4·0, tarsus 1·25.

No number. Sarikol, May 9, 1874.

A pair killed on the large plain; they were sitting on the grass near water.

Family SCOLOPACIDÆ.

Genus **STREPSILAS.**

324. Strepsilas interpres.

Strepsilas collaris, Severtz. Turkest. Jevotn. p. 69 (1873).
Strepsilas interpres (L.); Blanf. East. Persia, ii. p. 281 (1876); Dresser, Ibis, 1876, p. 328.

No number. Nubra Valley, October 1873 (*Dr. Bellew*).

Genus **CALIDRIS.**

325. Calidris arenaria.

Calidris arenaria, Scully, Str. F. iv. p. 188 (1876); Blanf. East. Persia, ii. p. 283 (1876).

Dr. Scully states that a specimen of the Sanderling was shot at Sughuchak, near Yarkand, in October; about half a dozen of these birds were observed on the same day on the borders of swamps, associated with *Tringa subarquata.*

The bird is called "*Yamghurchi*" by the Yarkandis, and is said to breed in Kashgharia, migrating southwards in winter.

Genus **TOTANUS.**

326. Totanus canescens.

Totanus glottis, Hume & Henders. Lahore to Yark. p. 290 (1873) ; Severtz. Turkest. Jevotn. p. 69 (1873) ; Prjev. in Rowley's Orn. Misc. iii. p. 88 (1878) ; Bidd. Ibis, 1881, p. 97 ; Scully, t. c. p. 589.
Totanus canescens, Scully, Str. F. iv. p. 189 (1876) ; Dresser, Ibis, 1876, p. 411.

No. 604. Leh, August 31, 1873.
No. 740. East of Tanksi, September 18, 1873.

Dr. Henderson obtained a specimen on the 1st of September close to the city of Yarkand itself.

Dr. Scully observes :—"The Yarkandi bird-catchers give the following account of this species : It is always found either near running water or near pools and swamps ; it disappears entirely in winter, but breeds in Eastern Turkestan in summer ; the nest is placed in short grass in the midst of water and the eggs are nearly as large as a pigeon's. The Turki name for the Greenshanks is '*Mashak yamghurchi,*' which may be rendered in French by 'Chat pluvier.'"

327. Totanus calidris.

Totanus calidris, Severtz. Turkest. Jevotn. p. 69 (1873) ; Dresser, Ibis, 1876, p. 412 ; Scully, Str. F. iv. p. 189 (1876) ; Blanf. East. Persia, ii. p. 285 (1876) ; Prjev. in Rowley's Orn. Misc. iii. p. 88 (1878) ; Bidd. Ibis, 1881, p. 97 ; Scully, ibid. p. 589.

No. 1017. Yarkand, November 13, 1873.
No. 1025. Yarkand, November 14, 1873.
No. 1049. Yarkand, November 23, 1873.
No. 1809. Kárghalik, May 29, 1874.
No. 1813. Kárghalik, May 29, 1874.—With the eggs.

Dr. Scully gives the following note :—"The first specimen of the Redshank was obtained at Káshghar in November, where it was tolerably common. After that it was not met with until March ; and in May and June this species swarmed everywhere near water in the vicinity of Yarkand. The bird was also found in the valley of the Karakásh towards the end of August."

Dr. Stoliczka found it breeding near Yarkand on the 22nd of May, and on the 29th of May, writing from Kárghalik, notes in his 'Diary' :—"I also found the nest of *Totanus calidris,* a very loose structure of old grass or dry reeds, in water about a foot deep ; nest with seven eggs. Young fully developed and would have been hatched in a couple of days."

328. Totanus fuscus.

Totanus fuscus (L.) ; Severtz. Turkest. Jevotn. p. 69 (1873) ; Blanf. East. Persia, ii. p. 285 (1876) ; Dresser, Ibis, 1876, p. 411 ; Prjev. in Rowley's Orn. Misc. iii. p. 88 (1878).

No. 1600. Sarikol, May 9, 1874.

A specimen putting on the full black plumage, but still with considerable remains of winter plumage.

329. Totanus glareola.

Totanus glareola, L.; Severtz. Turkest. Jevotn. p. 69 (1873); Dresser, Ibis, 1876, p. 412; Blanf. East. Persia, ii. p. 285 (1876); Prjev. in Rowley's Orn. Misc. iii. p. 88 (1878); Scully, Ibis, 1881, p. 589; Zarudn. Ois. Transcasp. p. 69 (1885).

Actitis glareola, Bidd. Ibis, 1881, p. 96.

No. 826. Sháhidúla, October 19, 1873.

No. 1005. Yarkand, November 11, 1873.

330. Totanus ochropus.

Actitis ochropus (L.); Hume & Henders. Lahore to Yark. p. 289 (1873); Severtz. Turkest. Jevotn. p. 69 (1873); Dresser, Ibis, 1876, p. 412; Scully, Str. F. iv. p. 188 (1876); Blanf. East. Persia, ii. p. 285 (1876); Prjev. in Rowley's Orn. Misc. iii. p. 87 (1878); Bidd. Ibis, 1881, p. 96.

Totanus ochropus, Scully, Ibis, 1881, p. 589; Zarudn. Ois. Transcasp. p. 70 (1885); Scully, J. A. S. Beng. lvi. p. 87 (1887); Sharpe, Trans. Linn. Soc. (2) Zool. v. pt. 3, p. 89 (1889).

No. 240. Srinagar, August 1, 1873.

No. 467. Kargil, Ladák, August 19, 1873.

No. 632, ♀ imm. Leh, September 5, 1873.—Iris dark brown; bill greenish horny black; feet greenish, with a slight bluish tinge. Length 9·6 inches, wing 3·5, tail 2·25, tarsus 1·5.

No. 670. Leh, September 10, 1873.

No. 737. East of Tanksi, September 18, 1873.

No. 1014. Yarkand, November 13, 1873.—"Belakchi."

No. 1284. Káshghar, January 31, 1874.

"This species," says Dr. Scully, "was very common near Káshghar during the first half of the winter, and was often seen at Yarkand near streams, pools, and swamps from March to August. During the latter month it was met with in suitable localities in the hills up to about 13,000 feet. In common with so many other waders, it is called by the Kashgharians '*Yamghurchi*,' 'the rainy one' (*Pluvialis*); but the professional bird-catchers of the country distinguished it as '*Zagharak*.'"

Genus **TRINGOIDES.**

331. Tringoides hypoleucus.

Totanus hypoleucus, Severtz. Turkest. Jevotn. p. 69 (1873); Dresser, Ibis, 1876, p. 411.

Actitis hypoleucus (L.); Hume & Henders. Lahore to Yark. p. 289 (1873); Scully, Str. F. iv. p. 188 (1876).

Tringoides hypoleucus, Blanf. East. Persia, ii. p. 285 (1876); Prjev. in Rowley's Orn. Misc. iii. p. 89 (1878); Wardlaw Ramsay, Ibis, 1880, p. 71; Bidd. Ibis, 1881, p. 97; Scully, ibid. p. 589; Zarudn. Ois. Transcasp. p. 70 (1885); Scully, J. A. S. Beng. lvi. p. 87 (1887).

No. 316. Sonámarg, August 10, 1873.

No. 951. Bora, November 11, 1873.

According to Dr. Scully, the "Common Sandpiper was not obtained in the plains of Kashgharia, but was often observed on the return journey in August near the pebbly banks

of the Arpalák and Sanju streams. Further up, in the mountains, it was seen daily along the banks of the Karakásh river and on small swamps near that stream. The occurrence of the young bird, noted above, at Gulgun Shah seems to prove that this species breeds in Eastern Turkestan."

Genus **HIMANTOPUS.**

332. Himantopus melanopterus.

Hypsibates himantopus, Severtz. Turkest. Jevotn. p. 69 (1873).
Himantopus intermedius, Blyth; Scully, Str. F. iv. p. 190 (1876).
Himantopus candidus, Blanf. East. Persia, ii. p. 286 (1876); Dresser, Ibis, 1876, p. 329; Prjev. in Rowley's Orn. Misc. iii. p. 89 (1878); Bidd. Ibis, 1881, p. 99; Scully, ibid. p. 590; id. J. A. S. Beng. lvi. p. 87 (1887).

Dr. Scully writes :—"The Stilt is a seasonal visitant to the plains of Eastern Turkestan, where it breeds. It arrives in May and probably leaves about the end of September; it was never seen in winter. Near Yarkand in summer the birds were found in enormous numbers, frequenting small salt pools, little lakes, and marshy ground. In June I noticed that when these birds were disturbed they used to hover over one and could therefore be very easily shot. The cry of this bird is a kind of plaintive, but shrill sound, something like *crèk*, *crèk*; in flying about they were often mixed up with the Terns, *Sterna fluviatilis* and *Sternula minuta*. The Turki name for this species is '*Kakhshal pachak*,' 'Stilt' (?) leg."

Genus **MACHETES.**

333. Machetes pugnax.

Philomachus pugnax (L.); Hume & Henders. Lahore to Yark. p. 287 (1873).
Machetes pugnax, Severtz. Turkest. Jevotn. p. 69 (1873); Dresser, Ibis, 1876, p. 410; Bidd. Ibis, 1881, p. 96; Scully, t. c. p. 588; Zarudn. Ois. Transcasp. p. 70 (1885); Scully, J. A. S. Beng. lvi. p. 87 (1887).
Tringa pugnax, Blanf. East. Persia, ii. p. 284 (1876).

No. 1524. Panjah, April 14–23, 1874.

Dr. Henderson states that this species was very common in the immediate neighbourhood of the city of Yarkand, where they undoubtedly breed.

Genus **TRINGA.**

334. Tringa subarquata.

Tringa subarquata (Gm.); Hume & Henders. Lahore to Yark. p. 288 (1873); Severtz. Turkest. Jevotn. p. 69 (1873); Dresser, Ibis, 1876, p. 411; Scully, Str. F. iv. p. 187 (1876); Blanf. East. Persia, ii. p. 284 (1876); Prjev. in Rowley's Orn. Misc. iii. p. 90 (1878); Bidd. Ibis, 1881, p. 96; Zarudn. Ois. Transcasp. p. 70 (1885).

No. 830. Upper Karakásh, October 1873 (*Colonel Biddulph*).

Dr. Henderson says that this species was common in the marshes in the immediate neighbourhood of Yarkand. Dr. Scully shot two specimens in October, in marshy ground, west of Yarkand, where it was common. It is said by him to breed in Eastern Turkestan, migrating in winter towards India. Called by natives of Khokand, "*Kugnak*."

335. Tringa alpina.

Tringa cinclus, Scully, Str. F. iv. p. 187 (1876); Blanf. East. Persia, ii. p. 283 (1876).
Tringa alpina, L.; Dresser, Ibis, 1876, p. 411; Seebohm, Geogr. Distr. Charadr. p. 425 (1888).
Tringa variabilis, Severtz. Turkest. Jevotn. p. 69 (1873).

Dr. Scully says:—"This species was obtained at Káshghar, where it was not very common, in October. It is said to breed in Eastern Turkestan and to disappear entirely in winter, migrating, it is believed, to India."

336. Tringa temminckii.

Tringa temminckii (Leisl.); Hume & Henders. Lahore to Yark. p. 289 (1873); Severtz. Turkest. Jevotn. p. 69 (1873); Dresser, Ibis, 1876, p. 411; Prjev. in Rowley's Orn. Misc. iii. p. 90 (1878); Bidd. Ibis, 1881, p. 96; Scully, t. c. p. 589; Zarudn. Ois. Transcasp. p. 70 (1885).

No. 633, ♂. Leh, September 5, 1873.—Bill greenish at base, blackish towards the tip; feet greenish, dusky on the toes. Length 5·75 inches, wing 4·0, tail 1·8, tarsus 0·75.
Nos. 645, 654. Leh, September 7–9, 1873.
No. 764. Lukung, September 20, 1873.
No. 862. Gidjik, October 24, 1873.
Nos. 1705, 1712, 1714. Yarkand, May 22, 1874.

Dr. Stoliczka mentions in his 'Diary' that he found "a little Tringa," which should be the above species, breeding in a jheel near Yarkand on the 22nd of May. The only eggs, however, which I could find in the collection appear to be those of *Ægialitis dubia*. Colonel Biddulph shot a specimen at Leh (11,000 feet) on the 7th of September.

337. Tringa minuta.

Tringa minuta, Leisl.; Severtz. Turkest. Jevotn. p. 69 (1873); Dresser, Ibis, 1876, p. 410; Blanf. East. Persia, ii. p. 284 (1876); Bidd. Ibis, 1881, p. 96; Scully, t. c. p. 588; Zarudn. Ois. Transcasp. p. 70 (1885).

Nos. 1033, 1079, 1080. Yarkand, November 21–28, 1873.

Genus **SCOLOPAX.**

338. Scolopax rusticula.

Scolopax rusticola, L.; Severtz. Turkest. Jevotn. p. 69 (1873); Blanf. East. Persia, ii. p. 282 (1876); Dresser, Ibis, 1876, p. 330.
Scolopax rusticula, Bidd. Ibis, 1881, p. 95; Scully, t. c. p. 588; id. J. A. S. Beng. lvi. p. 87 (1887).

No. 1000. Yarkand, November 11, 1873.

Genus **GALLINAGO.**

339. Gallinago scolopacinus.

Gallinago scolopacinus, Bp.; Scully, Str. F. iv. p. 186 (1876); Blanf. East. Persia, ii. p. 282 (1876); Prjev. in Rowley's Orn. Misc. iii. p. 90 (1878); Bidd. Ibis, 1881, p. 95; Scully, ibid. p. 588; id. J. A. S. Beng. lvi. p. 87 (1887); Sharpe, Trans. Linn. Soc. (2) Zool. v. pt. 3, p. 89 (1889).

Scolopax gallinago (L.); Severtz. Turkest. Jevotn. p. 69; Dresser, Ibis, 1876, p. 330; Zarudn. Ois. Transcasp. p. 70 (1885).

No. 603. Leh, August 31, 1873.

"The Common Snipe," says Dr. Scully, "was tolerably numerous in the neighbourhood of Yarkand in summer, where it was ascertained to breed; the bird was never observed in winter. It was found in the neighbourhood of marshy ground and inundated fields. The Turki name for the Snipe is '*Mahramchi*,' 'the solitary one.'"

340. Gallinago stenura.

Gallinago sthenura (Bp.); Hume & Marsh. Game Birds Ind. iii. p. 339, pl. (1880).

Scolopax stenura, Scebohm, Geogr. Distr. Charadr. p. 477 (1887).

No. 606. Leh, August 31, 1873.

No. 741. East of Tanksi, September 18, 1873.

341. Gallinago solitaria.

Gallinago solitaria (Hodgs.); Hume & Henders. Lahore to Yark. p. 286 (1873); Prjev. in Rowley's Orn. Misc. iii. p. 91 (1878); Bidd. Ibis, 1881, p. 95; Scully, t. c. p. 588; id. J. A. S. Beng. lvi. p. 87 (1887).

No. 709. Tanksi, September 9, 1873.

Nos. 923, 924. Sanju, November 1, 1873.

Colonel Biddulph writes:—"I shot one on the south side of the Sakti Pass, near Chimray, and we shot several along the stream in the narrow valley (13,500 feet) leading from Tanksi to the Pangong Lake. I also saw one between Sarhad and Panjah in Wakhán."

Order FULICARIÆ.

Family OTIDIDÆ.

Genus **OTIS.**

342. Otis tetrax.

Otis tetrax, L.; Severtz. Turkest. Jevotn. p. 68 (1873); Dresser, Ibis, 1876, p. 326; Scully, Str. F. iv. p. 184 (1876); Blanf. East. Persia, ii. p. 287 (1876); Bidd. Ibis, 1881, p. 94; Scully, ibid. p. 586; C. Swinh. Ibis, 1882, p. 119; Severtz. Ibis, 1883, p. 72; Zarudn. Ois. Transcasp. p. 67 (1885); Scully, J. A. S. Beng. lvi. p. 87 (1887).

No. 1096, ♀. Yangihissár, November 30, 1873.—Length 17·5 inches, wing 10·1, tail 4·25, tarsus 5; expanse 35·5; bill from front 1, from gape 1·5; middle toe 1·7. Iris yellow; bill dusky horny above, paler about the middle of culmen, pale at sides and below; feet dusky horny, tarsi pale yellow horny. Wings reach within 1·2 inch of end of tail.

Dr. Scully writes :—"A single specimen of the Little Bustard was obtained at Káshghar in December. The bird is not at all common near Káshghar or Yarkand; but on the road from Kárghalik to Sanju in August, I heard a good deal about it, and at Koshtak I had the characteristic footprints of this bird pointed out to me on the sand. The Turki name for this species is '*Kum tokhosi*,' *i. e.* 'The Sand Fowl.' "

Family RALLIDÆ.

Genus **FULICA.**

343. Fulica atra.

Fulica atra, L.; Hume & Henders. Lahore to Yark. p. 293 (1873); Severtz. Turkest. Jevotn. p. 69 (1873); Dresser, Ibis, 1876, p. 413; Scully, Str. F. iv. p. 191 (1876); Blanf. East. Persia, ii. p. 289 (1876); Prjev. in Rowley's Orn. Misc. iii. p. 94 (1878); Bidd. Ibis, 1881, p. 97; Scully, ibid. p. 590; C. Swinh. Ibis, 1882, p. 122; Scully, J. A. S. Beng. lvi. p. 88 (1887); Sharpe, Trans. Linn. Soc. (2) Zool. v. pt. 3, p. 90 (1889).

No. 911. South of Sanju Pass, October 25, 1873.

Dr. Henderson says that the Coot was not uncommon in the Lakes of Kashmir, where it was breeding in May and June. After the Zoji-là was crossed it was only seen in the Indus near Leh.

Dr. Scully writes :—"The Coot is exceedingly common in the plains of Kashgharia from March to October; very few of the birds are to be seen during the winter. It is found on all lakes and jheels; often near springs and small streams. When alarmed it scuds across the water, seldom flying up, but flapping the surface of the water until it can hide among the rushes; it is also a wonderfully good diver. This species breeds in Turkestan in May, June, and July. The Turki name is '*Kashkaldak*,' *i. e.* 'Bald brow.' "

Genus **GALLINULA.**

344. Gallinula chloropus.

Gallinula chloropus, L.; Hume & Henders. Lahore to Yark. p. 293 (1873); Severtz. Turkest. Jevotn. p. 89 (1873); Dresser, Ibis, 1876, p. 413; Scully, Str. F. iv. p. 192 (1876); Blanf. East. Persia, ii. p. 288 (1876); Prjev. in Rowley's Orn. Misc. iii. p. 94 (1878); Bidd. Ibis, 1881, p. 98; Scully, ibid. p. 590.

Stagnicola chloropus, Radde, Ornis, iii. p. 496 (1887).

No. 170. Kashmir Lake, July 26, 1873.

No. 237. Srinagar, August 1, 1873.

Srinagar, August 5, 1873.

The Water-hen was only met with by Dr. Henderson in Kashmir, where it was very plentiful about all the lakes, in which it was breeding in June.

Dr. Scully's note is as follows:—"The Water-hen was tolerably common in the plains (of Turkestan) in summer, where it breeds; it was never met with during the winter. It frequented jheels and swamps, running about with great ease on the fallen rushes floating on the surface of the water; it was often noticed flirting up its tail, and thus showing the white feathers in it very conspicuously. The Turki name for this species is '*Kodan*,' and it is sometimes called '*Kharonah*' (i. e. *Kharun*, Persian—a restive horse)."

Genus **RALLUS.**

345. Rallus aquaticus.

Rallus aquaticus, L.; Severtz. Turkest. Jevotn. p. 69 (1873); Dresser, Ibis, 1876, p. 412; Scully, Str. F. iv. p. 193 (1876); Blanf. East. Persia, ii. p. 288 (1876); Hume & Marsh. Game Birds of India, ii. p. 261 (1879); Bidd. Ibis, 1881, p. 98; Scully, ibid. p. 591; Zarudn. Ois. Transcasp. p. 66 (1885); Scully, J. A. S. Beng. lvi. p. 87 (1887); Sharpe, Trans. Linn. Soc. (2) Zool. v. pt. 3, p. 89 (1889).

Dr. Scully observes:—"The Water-Rail was tolerably common near Yarkand in summer; it was never observed in winter, but some of the shikaris there said that the bird was a permanent resident. It was found in marshes, among the rushes, where it was said to breed. The Turki name for this species is '*Yekan Tokhisi*,' *i. e.* the Rush Fowl."

Genus **PORZANA.**

346. Porzana fusca.

Porzana fusca (L.); Hume & Marsh. Game Birds of India, ii. p. 217, pl. 38. fig. 2 (1879).

Crex fusca (L.); Seebohm, B. Japan. Emp. p. 357 (1890).

Nos. 207, 209. Srinagar, July 29, 1873.

347. Porzana pusilla.

Porzana pygmæa (nec Naum.) ; Hume & Henders. Lahore to Yark. p. 293 (1873) ; Scully, Str. F. iv. p. 193 (1876) ; Bidd. Ibis, 1881, p. 98.
Gallinula pygmæa (nec Naum.), Severtz. Turkest. Jevotn. p. 69 (1873).
Porzana bailloni (V.) ; Dresser, Ibis, 1876, p. 413 ; Hume & Marsh. Game Birds of India, ii. p. 203, pl. 35 (1879) ; Scully, Ibis, 1881, p. 590 ; C. Swinh. Ibis, 1882, p. 123 ; Scully, J. A. S. Beng. lvi. p. 88 (1887).
Ortygometra pygmæa, Prjev. in Rowley's Orn. Misc. iii. p. 94 (1878).
Ortygometra bailloni, Sharpe, Trans. Linn. Soc. (2) Zool. v. pt. 3, p. 90 (1889).
Porzana pusilla (Pall.) ; Grant, Ann. & Mag. Nat. Hist. (6) v. p. 80 (1890).
Crex pusilla (Pall.) ; Seebohm, B. Japan. Emp. p. 355 (1890).

No. 808. Aktágh, October 13, 1873.

Dr. Henderson obtained a specimen near Sháhidúla. Dr. Scully writes :—"A single specimen of this species was obtained in marshy ground near the city of Yarkand on the 29th of June. It was not at all common near Yarkand ; but it is probable that a few birds breed there."

348. Porzana maruetta.

Porzana maruetta (Leach) ; Hume & Henders. Lahore to Yark. p. 293 (1873) ; Dresser, Ibis, 1876, p. 413 ; Scully, Str. F. iv. p. 193 (1876) ; Blanf. East. Persia, ii. p. 288 (1876) ; Hume & Marsh. Game Birds of India, ii. p. 213, pl. 37 (1879) ; Bidd. Ibis, 1881, p. 98 ; Scully, ibid. p. 590 ; id. J. A. S. Beng. lvi. p. 88 (1887).
Gallinula porzana, Severtz. Turkest. Jevotn. p. 69 (1873).

A single specimen of this species was obtained by Dr. Henderson at the Karatágh Lake on the Karakoram, at an elevation of over 16,000 feet. "This was on the 24th of September, and the bird was probably on its way southwards. It could not possibly have been anything else but a casual visitor, as the lake lay in perfectly bare shingle, and there was scarcely a vestige of vegetation anywhere about. The bird was easily caught by the hand, and at the same time and place, as already mentioned, a Common Quail was captured. This lake lies almost in the most direct route as the crow flies between Yarkand plains and Leh, and between the nearest points respectively of the Karakásh and Shyok."

Dr. Scully also procured a specimen of the Spotted Crake at Toghrasu on the 21st September, elevation 11,265 feet. The bird was probably migrating southwards.

Mr. Hume adds a note :—"It is very remarkable that the only specimen of this Rail obtained by Dr. Henderson was caught at the Karatágh Lake, at an elevation of 16,000 feet, just 52 miles south of Toghrasu, on the 24th of September."

Order PYGOPODES.

Family PODICIPITIDÆ.

Genus **PODICIPES.**

349. Podicipes minor.

Podiceps minor (Gm.); Severtz. Turkest. Jevotn. p. 69 (1873); Hume & Henders. Lahore to Yark. p. 298 (1873); Dresser, Ibis, 1876, p. 413; Scully, Str. F. iv. p. 203 (1876); Blanf. East. Persia, ii. p. 304 (1876); Menzbier, Ibis, 1885, p. 358.
Podiceps philippensis, Bidd. Ibis, 1881, p. 101.
Podiceps fluviatilis, Scully, Ibis, 1881, p. 593; C. Swinh. Ibis, 1882, p. 125.

Nos. 236, 238. Srinagar, August 1, 1873.

The following notes occur in Dr. Stoliczka's 'Diary':—

"Srinagar, July 26.—Of *Podiceps minor* I got the eggs. The bird makes a heap of mud and water-plants; it is a rather solid structure, and is about four inches above water. The eggs are dirty white and pointed at both ends.

"Srinagar, July 31.—*Podiceps minor* is breeding a second time, and I got some fresh eggs."

Dr. Henderson obtained several specimens in June in Kashmir. The Little Grebe was observed at Káshghar in November and December by Dr. Scully. The bird was again noticed at Sughuchak in June. The natives assert that the bird breeds near Yarkand, and call it "*Chumighak*," *i. e.* "the Diver."

350. Podicipes cristatus.

Podiceps cristatus, L.; Severtz. Turkest. Jevotn. p. 70 (1873); Dresser, Ibis, 1876, p. 414; Scully, Str. F. iv. p. 203 (1876); Blanf. East. Persia, ii. p. 304 (1876); Prjev. in Rowley's Orn. Misc. iii. p. 108 (1878).

Dr. Scully says:—"The Crested Grebe was numerous in the lakes of Sughuchak, about twelve miles west of Yarkand, in summer, where it was breeding. The birds were so difficult to approach, however, that I only managed to shoot two, and one of those I lost in the thick reeds and rushes into which it fell. The bird was never seen in winter."

APPENDIX.

Mr. Hume has very generously presented to the India Office some plates of Indian birds, which had been prepared for his contemplated work on the Avifauna of the British Asian Empire. I have therefore availed myself of the opportunity to utilize these plates on the present occasion, as some of them are excellent examples of Mr. Keuleman's work.

1. Hierofalco saker. (Plates XVI.–XIX.)

Falco sacer, Gm. Syst. Nat. i. p. 273 (1788).
Hierofalco saker, Sharpe, Cat. B. Brit. Mus. i. p. 417 (1874).

I here give a few remarks on the changes of plumage in the Saker Falcon, based upon the material in the Hume Collection :—

Young male. General colour above nearly uniform brown, with somewhat of an ashy shade and a slight indication of rufous margins to the feathers of the lower back and rump and upper wing-coverts; the scapulars with a few rounded whitish spots; tail-feathers brown, shaded with ashy and rather broadly tipped with white, and having the inner web barred, and the outer web roundly spotted, with rufous or rufous-white; quills dark brown, the primary-coverts and secondaries with rufescent edges like the scapulars, the primaries dusky below and broadly banded with pale rufous for nearly the entire extent of the inner web, these light bars on the inner web often forming broad triangular notches; crown of head pale tawny rufous, rather broadly streaked with black; the hind neck whitish, with broad centres of dusky brown to the feathers; lores and base of forehead buffy white; a superciliary band of white, narrowly streaked with black, forming an indistinct eyebrow; feathers behind the eye and a broad streak along the upper edge of the ear-coverts dark brown; remainder of the ear-coverts whitish, narrowly lined with black; from below the eye a broad moustachial streak of black obliquely crossing the cheeks to the sides of the throat; the fore part of the cheeks white like the throat; remainder of the under surface of body ochreous buff, very broadly streaked with blackish brown; the upper part of the thighs uniform dark brown, rest of the thighs creamy white, streaked with brown; the upper part of the tarsus also feathered in front; lower abdomen and under tail-coverts creamy buff; the flank-feathers very uniform brown, the feathers being broadly edged externally with sandy buff, while on the inner web of many of them is an ovate spot of sandy buff, indicating a break-up of the pattern of the feather; axillaries brown with twin spots of sandy buff; under wing-coverts also brown, with edgings and spots of sandy buff, the smaller coverts sandy buff streaked with brown, especially near the edge of the wing; lower primary-coverts ashy, like the quill-lining, with twin spots of creamy buff. Total length 20 inches, wing 14·5, tail 8·0, tarsus 2·5.

The above is a description of a young bird from Asia Minor, and specimens in almost identical plumage are in the Hume Collection, obtained in the Sirsa district during the cold weather. It is evident that the more definitely spotted plumage of the chest is gained by a change of pattern in the feathers rather than by a moult, the brown colour becoming disintegrated near the base of the feathers and disappearing gradually, so as to leave a terminal spot of brown; the flank-feathers also undergo considerable alteration in the pattern of the brown colour, which is much encroached upon by the white markings of the inner web. At the same time the head becomes gradually lighter and the brown stripes narrower; the feathers of the upper parts are margined with rufous, and the round spots on the tail are very characteristic. I believe that these spots make their appearance gradually on the tail without a moult, and that they are seen in the first autumn of the bird's life.

Several specimens in the Hume Collection are moulting, and it is interesting to note that, as is often the case with other *Accipitres*, the new feathers on the chest are identical in pattern with those of the worn plumage which preceded them—that is to say, that the brown markings of the chest-plumes have already altered from the longitudinal form to the terminal spot, and that the newly-moulted feathers commence with the latter form. The dorsal plumes are greyish with rufous edges.

The older the bird, the more rufous does it become on its upper surface; the tail shows numerous spots and bars, the former being on the outer web and the latter on the inner web. The centre tail-feathers appear to be more or less uniform, showing a return to the condition of the first plumage.

The following is a list of the specimens now in the Collection of the British Museum:—

a. ♀ juv. sk.	South Hungary.	A. Baron von Hügel.
b. Juv. sk.	Asia Minor.	Old Collection.
c, *d*. ♂ ad. sk.	River Volga.	Seebohm Coll.
e. ♂ imm. sk.	South Ural.	Dr. R. B. Sharpe [P.].
f. ♂ ad. sk.	Bala Morghab, N. Afghanistan, Dec. 14.	Dr. Aitchison [C.].
g. ♂ ad. sk.	Mehar, Upper Sindh, Jan. 16, 1872 (*A. O. H.*).	Hume Coll.
h–*w*. Ad. et imm. sk.	Sirsa district, Punjab, Cold Season, 1870–71.	Hume Coll.
x. ♂ ad.; *y*–*d'*. ♀ ad. et imm. sk.	Sirsa district, Oct. 1867–70.	Hume Coll.
e'–*i'*. ♂ ad. et imm. sk.	Sirsa district, Nov. 1869–71.	Hume Coll.
k'. ♀ ad. sk.	Sirsa district, Dec. 21, 1869.	Hume Coll.
l', *m'*, *n'*. ♂ ♀ ad. sk.	Sirsa district, Jan. 1871–72.	Hume Coll.
o'. ♀ ad. sk.	Sirsa district, Feb. 3, 1870.	Hume Coll.
p', *q'*. ♂ imm.; *r'*, *s'*. ♀ ad. et imm. sk.	Sirsa district, March 1870.	Hume Coll.
t'. ♀ imm. sk.	Lahore, Dec. 13, 1869 (*C. H. T. Marshall*).	Hume Coll.
u'. ♀ ad. sk.	Bahâwalpur, Nov. 27, 1867 (*C. H. T. M.*).	Hume Coll.
v'. Imm. sk.	Sultânpur, Gurgaon district, Dec. 31, 1878 (*W. N. Chill*).	Hume Coll.
w'. Ad. sk.	Mussooree (*C. Wilson*).	Hume Coll.
x'. ♂ ad. sk.	Dhurous, Mainpuri, Feb. 28, 1876 (*A. Anderson*).	Seebohm Coll.
y', *z'*. Imm. sk.	Nepal.	Hodgson Coll.

Of the distinctness of *Hierofalco milvipes*, Hodgs. (*H. hendersoni*, Hume), from *H. saker* there can no longer be any question. Unlike *H. saker*, which seems to get lighter on the

head with age, *H. milvipes* appears to get darker on the crown, and the barred appearance on the back and tail readily distinguishes adult birds. Young individuals are more difficult to distinguish, but those of *H. saker* are generally more uniform and those of *H. milvipes* exhibit a tendency to become barred.

The following is a list of the specimens of *H. milvipes* at present in the British Museum :—

a. Ad. sk.	Quetta.	Sir O. St. John [P.].
b. ♂ ad. sk.	Kitchik Yailák, Yarkand, Sept. 14.	Dr. G. Henderson [C.]. (Type of *F. hendersoni*).
c. ♀ imm. sk.	Yarkand, Feb. 26, 1875 (*J. Scully*).	Hume Coll.
d. Ad. sk.	Ladák (*Strachey*).	India Museum.
e. Imm. sk.	N.W. Himalayas.	Capt. Pinwill [P.].
f. ♀ ad. sk.	Umballa, Feb. 1867 (*Dr. Scott*).	Tweeddale Coll.
g. Ad. sk.	Nepal.	Hodgson Coll. (Type of *Falco milvipes*.)
h, i, k. Juv. sk.	Nepal.	Hodgson Coll.
l. Ad. sk.	Tibet, March 1876 (*L. Mandelli*).	Hume Coll.
m. Juv. sk.	Tibet, May 1875 (*L. Mandelli*).	Hume Coll.
n. ♀ Ad. sk.	Koko-nur (*N. Prjevalsky*).	Scebohm Coll.

Explanation of the Plates of *H. saker*.

Plate XVI. Fig. 1. ♀ juv., Lahore, Dec. 13 (*C. H. T. Marshall*).
2. ♀ juv., Sirsa district, Cold Season, 1870–71.
XVII. ♀ imm., 2nd year, Sirsa district, Jan. 11, 1871.
XVIII. Fig. 1. ♀ imm., 2nd year, Sirsa district, Oct. 29, 1870.
2. ♂ ad., Sirsa district, Nov. 1871.
XIX. Fig. 1. ♂ ad., Sirsa district, Oct. 17, 1867.
2. ♀ ad., Sirsa district, March 4, 1870.

2. Scops balli. (Plate XX.)

Ephialtes balli, Hume, Str. F. i. p. 407 (1873).
Scops balli, Sharpe, Cat. B. Brit. Mus. ii. p. 100 (1875).

A full description of the type specimen of *S. balli* is given in my 'Catalogue of Birds.' The left-hand figure has been drawn from the typical example, the right-hand from a somewhat younger bird in the Hume Collection, procured in September 1874, in South Andaman.

3. Carine pulchra. (Plate XXI.)

Athene pulchra, Hume, Str. F. i. p. 469 (1873), iii. p. 39 (1875).
Carine pulchra, Sharpe, Ibis, 1875, p. 258; id. Cat. B. Brit. Mus. ii. p. 140 (1875).

For remarks on the differences between this form and *C. brama*, see the 'Catalogue of Birds' (*l. c.*). *C. pulchra* is an inhabitant of Upper Burma.

4. Heteroglaux blewitti. (Plate XXII.)

Heteroglaux blewitti, Hume, Str. F. i. p. 467 (1873); Ball, Str. F. vii. p. 201 (1878); Sharpe, Cat. B. Brit. Mus. ii. p. 141 (1875).

This curious Owl is here figured for the first time. It has the general outward appearance of a *Carine*, but differs in the structure of the nostrils and other features of plumage. It is found in the extreme east of the Central Provinces of India around Sambalpur, &c.

5. Garrulus leucotis. (Plate XXIII.)

Garrulus leucotis, Hume, Str. F. ii. pp. 106, 443, 480 (1874); Blyth & Wald. B. Burm. p. 89 (1875); Sharpe, Cat. B. Brit. Mus. xiii. p. 99, pl. iv. (1877); Oates, Faun. Brit. Ind., Birds, i. p. 39 (1889).

This fine species of Jay appears to be confined to the pine-forests of Burma.

6. Cyanops incognita. (Plate XXIV.)

Megalaima incognita, Hume, Str. F. 1874, pp. 442, 486; Wald. in Blyth's B. Burm. p. 74 (1875).
Megalæma incognita, Hume & Davison, Str. F. vi. pp. 151, 501 (1878); Hume, Str. F. viii. p. 88 (1879); Bingham, t. c. p. 194; id. Str. F. ix. p. 186 (1880).
Cyanops incognita, Oates, Handb. B. Brit. Burm. ii. p. 134 (1883); Shelley, Cat. B. Brit. Mus. xix. p. 68, pl. iv. fig. 3 (1891).

This species is only found in Central Tenasserim.

LIST OF PLATES.

$\frac{2}{5}$

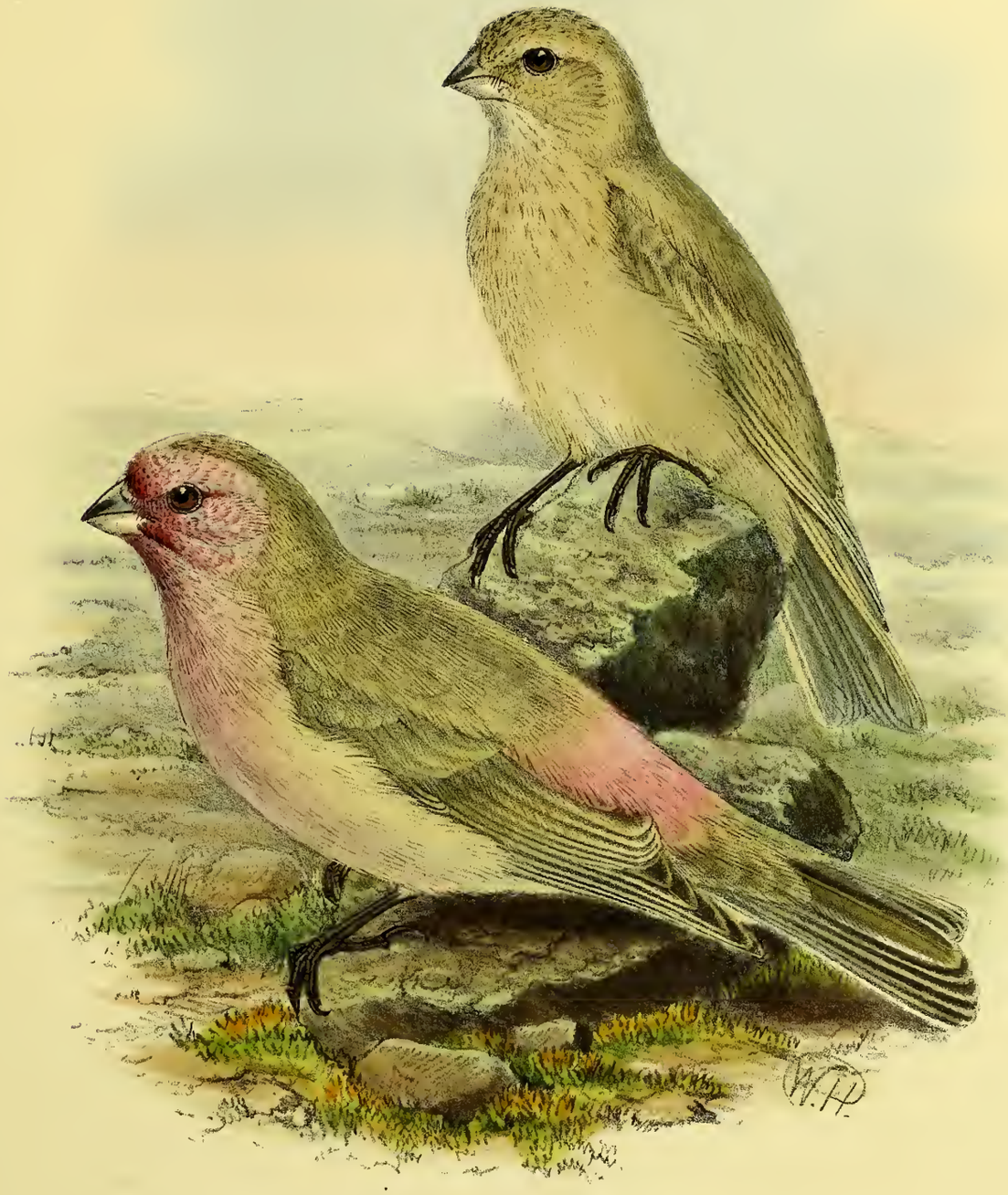
HIEROFALCO GYRFALCO.

SCOPS BRUCII.

CARINE BACTRIANA.

PODOCES BIDDULPHI.

RHODOPECHYS SANGUINEUS.



CARPODACUS STOLICZKÆ.

ÆGITHALUS CORONATUS.

LEPTOPŒCILE SOPHIÆ.

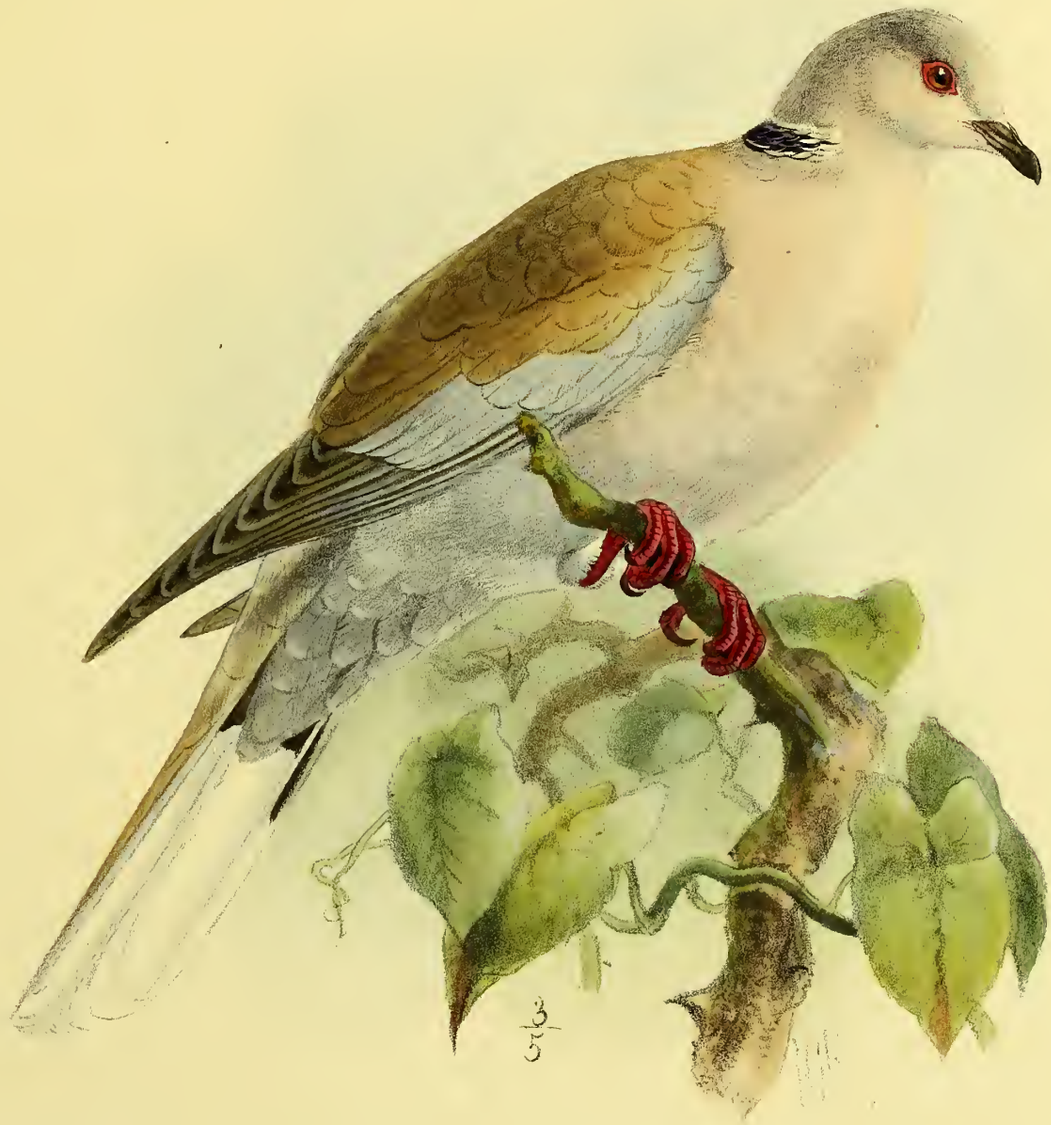
TRIBURA MAJOR.

PHYLLOSCOPUS TYTLERI.

CETTIA ORIENTALIS.

DENDROCOPUS LEUCOPTERUS.

DENDROCOPUS LEUCOPTERUS.



TURTUR STOLICZKÆ.

$\frac{1}{2}$

TETRAOGALLUS HIMALAYENSIS.

J.G.Keulemans lith

Hanhart imp

HIEROFALCO SAKER.

J.G.Keulemans lith.

Hanhart imp.

HIEROFALCO SAKER.

J.G.Keulemans lith

Hanhart imp.

HIEROFALCO SAKER.

J.G.Keulemans lith.

Hanhart imp.

HIEROFALCO SAKER

SCOPS BALLI.

CARINE PULCHRA.

2/3

HETEROGLAUX BLEWETTI.

GARRULUS LEUCOTIS.